

SUPPLEMENT.

The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[The MINING JOURNAL is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.]

No. 2217.—VOL. XLVIII.

LONDON, SATURDAY, FEBRUARY 16, 1878.

PRICE (WITH THE JOURNAL) SIXPENCE.
PER ANNUM, BY POST, £1 4s.

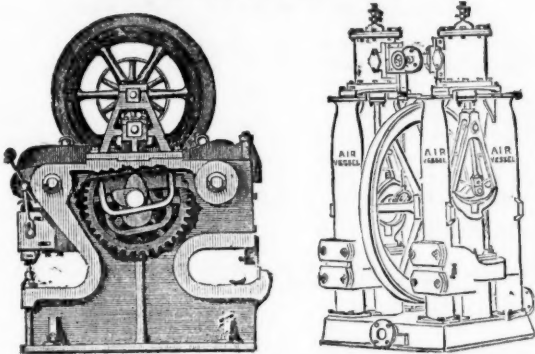
JOHN CAMERON'S

SPECIALITIES ARE ALL SIZES OF

Steam Pumps, Shipbuilders' Tools,

BAR SHEARS.

ESTABLISHED 1852.



OLDFIELD ROAD IRON WORKS,
SALFORD, MANCHESTER.

For Excellence
and Practical Success
of Engines



Represented by
Model exhibited by
this Firm.

HARVEY AND CO.

ENGINEERS AND GENERAL MERCHANTS,
HAYLE, CORNWALL,

LONDON OFFICE,—186, GRESHAM HOUSE, E.C.

MANUFACTURERS OF

PUMPING and other LAND ENGINES and MARINE STEAM ENGINES
of the largest and most approved kinds in use, SUGAR MACHINERY,
MILLWORK, MINING MACHINERY, AND MACHINERY IN GE-
NERAL. SHIPBUILDERS IN WOOD AND IRON.

MANUFACTURERS OF

HUSBAND'S PATENT PNEUMATIC STAMPS.

SECONDHAND MINING MACHINERY FOR SALE.

IN GOOD CONDITION, AT MODERATE PRICES—viz.,

PUMPING ENGINES; WINDING ENGINES; STAMPING ENGINES;
STEAM CAPSTANS; ORE CRUSHERS; BOILERS and PITWORK of
various sizes and descriptions; and all kinds of MATERIALS required for
MINING PURPOSES.

LYON & DAVISON,

IRONFOUNDERS, ENGINEERS, &c.,
Haydon Bridge, near NEWCASTLE-ON-TYNE,

Manufacturers of

LEAD SMELTING, REDUCING, AND REFINING FURNACES,
SLAG HEARTHES, AND SMELTERS' WORK GEAR.

Plans and Estimates furnished for improved Lead or Copper Mining and
Smelting Plant.

ST. LAWRENCE ROPE WORKS,

NEWCASTLE-ON-TYNE. Established 1782.

THOMAS AND WILLIAM SMITH,

Manufacturers of all kinds of Iron, Steel, Copper, and Galvanised Wire Ropes;
Hemp and Manila Ropes, &c.; Round and Flat Shaft Ropes; Crab Ropes; Guide
Ropes; Hauling Ropes; and Galvanised Signal Strand; Ship's Standing Rigging
fitted complete; Patent Hemp and Manila Hawseers, Warps, Cordage, Spun-yarn,
&c., &c.; Manila Yarn for Telegraph Cables, and Flat Hemp Ropes for Driving
Bands; Steel Plough Ropes; Fencing Wire and Stand Lightning Conductors, &c.

OFFICES—

1, QUEEN STREET, NEWCASTLE-ON-TYNE; DOCK YARD, NORTH
SHIELDS; 17, PHILPOT LANE, LONDON, E.C.

STORES—North Shields, Blackwall, Newcastle, and Tyne Dock.

STANDARD LUBRICATING OILS
COMPANY, LIMITED.

DARK and PALE OILS for MACHINERY, RAILWAY, and MINING
PURPOSES, from TWO SHILLINGS per gallon, and upwards.

AGENTS WANTED.

95, CANNON STREET, LONDON, E.C.

ASBESTOS.

A NEW and INDESTRUCTIBLE ASBESTOS PACKING for
steam joints and glands, possesses an unusual power of resisting
heat, works efficiently under the highest pressure of steam, being
practically indestructible. Apply to—

THE PATENT ASBESTOS MANUFACTURE CO. (LIMITED),
31, ST. VINCENT PLACE, GLASGOW,
AND 10, MARSDEN STREET, MANCHESTER.



PARIS,
BRONZE MEDAL, 1867.



ORDER OF THE CROWN OF PRUSSIA.



FALMOUTH,
SILVER MEDAL, 1867.

A DIPLOMA—HIGHEST OF ALL AWARDS—given by the
Geographical Congress, Paris, 1875—M. Favre, Contractor, having
exhibited the McKean Drill alone as the MODEL BORING MACHINE
for the ST. GOTHARD TUNNEL.

SILVER MEDAL of the Highland and West of Scotland
Agricultural Society, 1875—HIGHEST AWARD.

At the south end of the St. Gothard Tunnel, where

THE MCKEAN ROCK DRILLS

Are exclusively used, the advance made during eight consecu-
tive weeks, ending February 7, was 24'90, 27'60, 24'80, 26'10,
28'30, 27'10, 28'40, 28'70 metres. Total advance of south head-
ing during January was 121'30 metres, or 133 yards.

In a series of comparative trials made at the St. Gothard Tun-
nel, the McKean Rock Drill continued to work until the pres-
sure was reduced to one-half atmosphere (7½ lbs.), showing
almost the entire motive force to be available for the blow
against the rock—a result of itself indicating many advantages.

The GREAT WESTERN RAILWAY has adopted these
Machines for the SEVERN TUNNEL; the LONDON AND
NORTH-WESTERN RAILWAY for the FESTINIOG TUN-
NEL; and the BRITISH GOVERNMENT for several Public
Works. A considerable number of Mining Companies are now
using them. Shafts and Galleries are driven at from three to
six times the speed of hand labour, according to the size and
number of machines employed, and with important saving in
cost. The ratio of advantage over hand labour is greatest
where the rock is hardest.

These Machines possess many advantages, which give them
a value unapproached by any other system of Boring Machine.

THE MCKEAN ROCK DRILL IS ATTAINING GENERAL
USE THROUGHOUT THE WORLD FOR MINING, TUN-
NELLING, QUARRYING, AND SUB-MARINE BORING.

The MCKEAN ROCK DRILLS are the most powerful—the
most portable—the most durable—the most compact—of the
best mechanical device. They contain the fewest parts—have
no weak parts—act without SHOCK upon any of the operat-
ing parts—work with a lower pressure than any other Rock
Drill—may be worked at a higher pressure than any other
—may be run with safety to FIFTEEN HUNDRED STROKES
PER MINUTE—do not require a mechanic to work them—are
the smallest, shortest, and lightest of all machines—will give
the longest feed without change of tool—work with long or
short stroke at pleasure of operator.

The SAME Machine may be used for sinking, drifting, or
open work. Their working parts are best protected against
grit and accidents. The various methods of mounting them
are the most efficient.

N.B.—Correspondents should state particulars as to
character of work in hand in writing us for information,
on receipt of which a special definite answer, with
reference to our full illustrated catalogue, will be sent.

PORTABLE BOILERS, AIR COMPRESSORS, BORING STEEL,
IRON, AND FLEXIBLE TUBING.

The McKean Drill may be seen in operation daily in London.

McKEAN AND CO.

ENGINEERS.

OFFICES,

5, RUE SCRIBE, PARIS.

MANUFACTURED FOR McKEAN AND Co. BY

Messrs. P. and W. MACLELLAN, "CLUTHA IRONWORKS,"
GLASGOW.

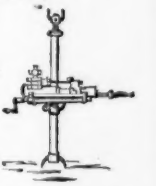
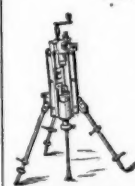
SMITH & FORREST,
OIL REFINERS,
ROSIN OIL DISTILLERS,
GREASE AND VARNISH MANUFACTURERS,
HOLT TOWN,
MANCHESTER.

Price List on application.

[ESTABLISHED TEN YEARS.]

DUNN'S ROCK DRILL,
AND
AIR COMPRESSORS.

FOR DRIVING BED ROCK
TUNNELS, SINKING
SHAFTS, AND PERFORMING
OPEN FIELD OPERATIONS,



IS THE
CHEAPEST, SIMPLEST,
STRONGEST, & MOST EFFECTIVE
DRILL IN THE WORLD.

Dunn's Patent Rock Drill Company
(LIMITED).

OFFICE,—193, GOSWELL ROAD
LONDON, E.C.

THE
PATENT SELF-ACTING MINERAL
DRESSING MACHINE COMPANY
(LIMITED).

T. CURRIE GREGORY, C.E., F.G.S.

OFFICES,—GLASGOW: 4, WEST REGENT STREET.
LONDON: 52, QUEEN VICTORIA STREET, E.C.

IMPORTANT NOTICE TO MINE PROPRIETORS.

MR. GEORGE GREEN, ENGINEER, ABERYSTWTH,
SUPPLIES MACHINES under the above Company's Patents for
DRESSING all METALLIC ORES. Dressing-floors having these Machines pos-
sess the following advantages:—

- 1.—THEY ARE CHEAPER THAN ANY OTHER KIND IN FIRST OUTLAY.
- 2.—ONLY ABOUT ONE-FOURTH OF THE SPACE USUALLY OCCUPIED
BY DRESSING-FLOORS IS REQUIRED.
- 3.—FROM 60 TO 70 PER CENT. OF THE LABOUR IN DRESSING, AND
FROM 5 TO 10 PER CENT. OF ORE OTHERWISE LOST, IS SAVED.
- 4.—THEY ARE THE ONLY MACHINES THAT MAKE THE ORE CLEAN
FOR MARKET AT ONE OPERATION.

They have been supplied to some of the principal mines in the United Kingdom
and abroad—viz.,

The Greenside Mines, Patterdale, Cumberland; London Lead Company's Mines
Darlington, Colberry, Nanthead, and Bollyhope; the Stouecroft and Greyside
Mines, Hexham, Northumberland; Wanlockhead Mines, Abington, Scotland (the
Duke of Buccleuch's); Bewick Partners, Haydon Bridge; the Old Darren, Eagair-
mwyn, and Ystumtuen Mines, in Cardiganshire; Mr. Beaumont's W.B. Mines,
Darlington; also Mr. Sewell, for Argentiferous Copper Mines, Peru; the Brats-
berg Copper Mines, Norway, and Mines in Italy, Germany, United States of
America, and Australia, from all of whom certificates of the complete efficiency of
the system can be had.

WASTE HEAPS, consisting of refuse chads and skimpings of a
former washing, containing a mixture of lead, blende, and sulphur,
DRESSED TO A PROFIT.

Mr. BAINBRIDGE, C.E., of the London Company's Mines, Middleton-
in-Teesdale, by Darlington, writing on the 20th March, 1876, says—"The yearly
profit on our Nanthead waste heaps amounted last year to £600, besides the ma-
chinery being occupied for some months in dressing ore-stuff from the mines. Of
course, if it had been wholly engaged in dressing wastes our returns would have
been greater; but it is giving us every satisfaction, and bringing the waste heaps
into profitable use, which would otherwise remain dormant."

Mr. T. B. STEWART, Manager of the Duke of Buccleuch's Mines,
Wanlockhead, Abington, N.B., writing on 20th March, 1876, says—"I have much
pleasure in stating that a full and superior set of your Ore Dressing Machinery has
been at work at these mines for fully a month, and each day as the moving parts
become smoother, and those in charge understand the working of the machinery
better, it gives increasing satisfaction, the ore being dressed more quickly, cheaply,
and satisfactorily than by any other method."

Mr. BAINBRIDGE, speaking of machinery supplied Colberry Mines,
says—"Your machinery saves fully one-half on old wages, and vastly more on the
wages we have now to pay. Over and above the saving in cost is the saving in ore,
which is a much short of 10 per cent."

GREENSIDE MINE COMPANY, Patterdale, near Penrith, say—"The
separation which they make is complete."

Mr. MONTAGUE BEALE says—"It will separate ore, however close
the mechanical mixture, in such a way as no other machines can do."

Mr. C. DODSWORTH says—"It is the very best for the purpose,
and will do for any kind of metallic ores—the very thing so long needed for dress-
ing-floors."

Drawings, specifications, and estimates will be forwarded on application to—
GEORGE GREEN, M.E., ABERYSTWTH, SOUTH WALES.

THE "UNIVERSAL" STEAM PUMP,

FOR DEEP MINING AND COLLIERY PURPOSES, HAS NOW
STOOD THE TEST OF MANY YEARS' SERVICE, AND
OVER 7000 ARE IN USE.



MESSRS. HAYWARD TYLER AND CO.,
ECKINGTON, February 4th, 1877.

GENTLEMEN,
In reply to your enquiry, the 15 by 7 Long Stroke Pump Messrs. Hayward Tyler and Co. supplied us with is working remarkably well; 7 feet suction, and forcing the water 180 feet perpendicular, with 40 lbs. of steam.

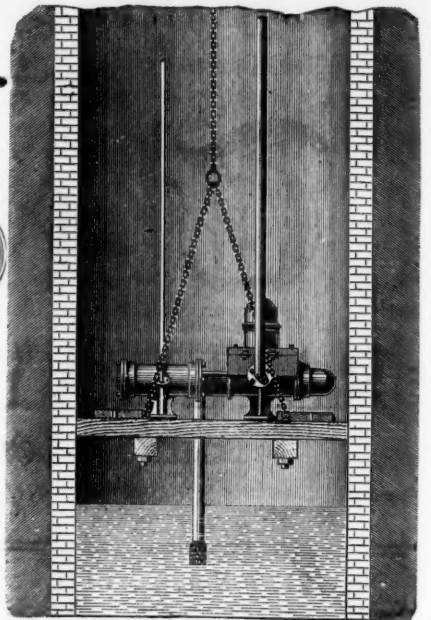
Before putting this engine in we had one H.P. Pumping Engine, 50 inch cylinder, 9 feet stroke, and firing six boilers, 36 feet by 4 feet, to drive it, now we only require two of the above boilers to do the same work with much less annoyance and attention.

I am, Gentlemen, yours truly,
JOHN MARPLES,
Engineer to J. and G. WELLS, Eckington Collieries.

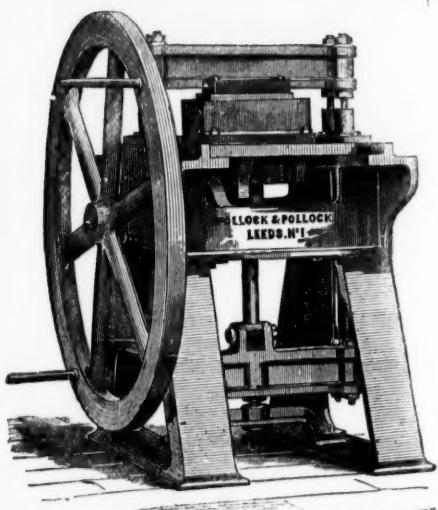
YATE COLLIERIES, near CHIPPING SODSBURY,
January 24th, 1877.

GENTLEMEN,
In reply to yours of the 15th inst. (which absence prevented my attending to earlier), I am very pleased to add a testimonial to the efficiency of your "Universal" Steam Pump. The one you supplied to us has worked most satisfactorily for the past six months, without giving us the least trouble. It is lifting over 2500 gallons an hour up a perpendicular height of 480 feet—going 30 strokes per minute, with a steam pressure of 30 lbs. per square inch—boiler 340 yards from pump. I can strongly recommend it as the most efficient pump for high lifts ever seen. I shall be very pleased to give information to any of your friends, or take them to view it working.

Yours faithfully,
EDWD. W. B. MONKS, Managing Director.



Sole Makers: HAYWARD TYLER & CO., ENGINEERS, LONDON.



POLLOCK AND POLLOCK, LONGCLOSE WORKS, NEW TOWN, LEEDS, POLLOCK'S PATENT BRICK PRESS, The New "XL" Brick-Making Machines,

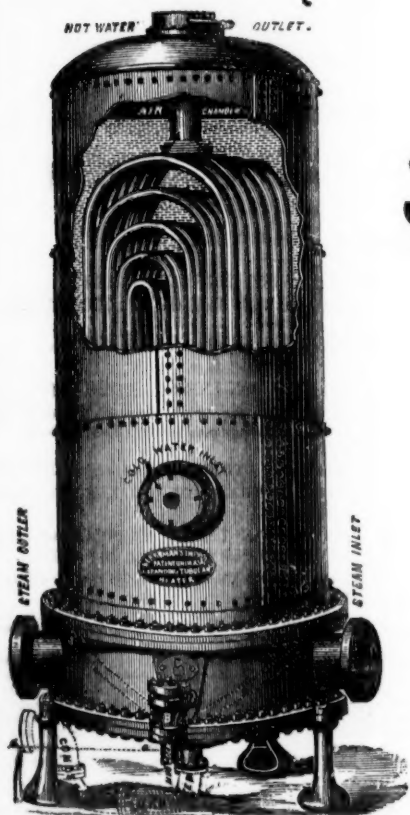
THE CHEAPEST AND BEST IN THE MARKET.

Improved Grinding Pans, with patent self-acting delivery.
Vertical and Horizontal Engines.

COLLIERY ENGINEERS.—WINDING ENGINES OF ALL SIZES.

POLLOCK AND MITCHELL'S PATENT KILNS are the Cheapest and Simplest.

London Office—155, Fenchurch Street, E.C.



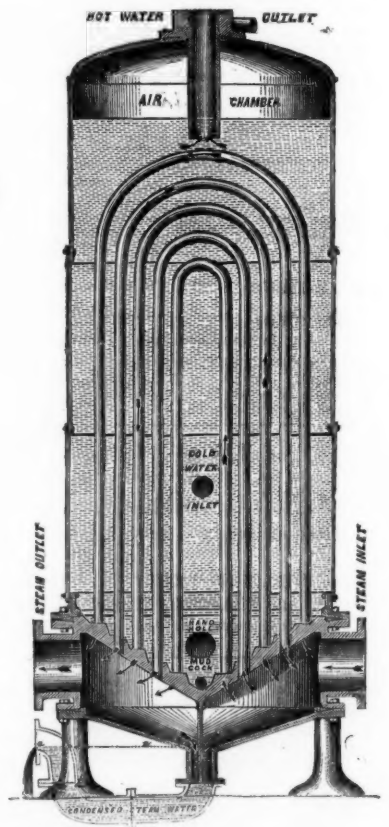
IMPORTANT.

JOSEPH WRIGHT AND CO.

(LIMITED),

NEPTUNE FORGE ENGINE
AND BOILER WORKS,

TIPTON, STAFFORDSHIRE,



Having purchased the Engineering Business lately carried on by R. BERRYMAN AND CO., at 23, Congreve-street, Birmingham, and 28, Wilson-street, Finsbury-square, London, have removed the whole to their Works at TIPTON, to which place ALL COMMUNICATIONS SHOULD IN FUTURE BE ADDRESSED, and where the BERRYMAN HEATER can be seen at work, and in every stage of manufacture.

Being the SOLE MAKERS and PATENTEES of these CELEBRATED COAL SAVERS and EXHAUST STEAM UTILISERS, and having remodelled and greatly improved them, adding largely to their HEATING SURFACE and WATER CAPACITY, J. W. and Co. have put down a special plant, which includes an entire new set of improved patterns, enabling them to offer these FEED WATER HEATERS to the public at

GREATLY REDUCED PRICES.

This arrangement of BRASS TUBES of a great length giving an enormous HEATING SURFACE makes this HEATER not only the MOST POWERFUL ever invented, but its FIRST COST PER FOOT OF HEATING SURFACE IS LESS THAN HALF THAT OF ANY OTHER. It will condense the whole of the Exhaust Steam from the Engine if required, and entirely does away with the NOISE and BACK PRESSURE from exhaust pipes.

ALL THE TUBES ARE OF SPECIALLY PREPARED SOLID DRAWN BRASS AND COPPER; both ends are expanded into the bored holes of the same Tube Plate, METAL TO METAL, and every tube is free to expand and contract independent of each other. Leakage is impossible, as, when the tubes are once fixed, nothing short of cutting out will remove them. No scurf adheres to the tubes because of the difference of expansion between SCURF and BRASS. The inside of the Heater can be washed out by means of the mud cock and hand hole whilst at work.

Only one pump or injector is required, and as the Heater is placed between the pump and the boiler, the water is forced, COLD, into it, and passes out at the top HOT into the boiler direct. Where the WATER WORKS PRESSURE is sufficient no pump or injector is needed.

The water being heated to BOILING POINT UNDER PRESSURE in the Heater, a saving of from 20 per cent. to 25 per cent. in fuel is effected; the disastrous results of grease in boilers are also avoided, the sewage and other loose matter in the water being deposited in the Heater, the acids are liberated there instead of in the boiler.

Every part can be lined with BRASS, COPPER, or LEAD, as may be required in special cases for heating water or any kind of liquor in large quantities for CHEMICAL WORKS, BATHS, WASH-HOUSES, AQUARIA, GREENHOUSES, BREWERIES, WOOL WASHING, DYE WORKS, TANNERIES, &c., &c.; they will also HEAT AIR FOR CUPOLAS and BLAST FURNACES, and are now at work as INTERHEATERS for compound engines with direct steam from the boiler with a further saving of 15 per cent.

The New Price List, with detail information, is now ready, and will be sent on application, together with an Illustrated Catalogue, with references and testimonials from Firms using TWO HUNDRED AND THIRTY-THREE of these Heaters.

Original Correspondence.

TASMANIAN TIN FIELDS—No. VI.

SIR.—In going to Mount Bischoff the usual route is by way of the north-west coast. I first had to travel 132 miles, by what is known as the main line railway—a journey that occupies at least 10 hours by ordinary train, and about six hours by express. The first 60 miles is a continuation of steep inclines and sinuous curves; some of the latter much resemble a horseshoe, the bend or toe of which is generally the bottom between two steep inclines. The rest of the journey is performed on a tolerably straight line through open country, which is principally held for pasturage for sheep, with only a patch or two in places under cultivation; but studded with a variety of trees and shrubs, which add considerably to the grandeur of the scenery along the line of travel from Hobart Town in the south to Launceston in the north. Launceston stands between the north and south Esk rivers, where the two unite in forming the Tamar river, which is navigable for ships of 600 tons register. At Launceston we have to take the steamboat to go down the Tamar river to the Heads—a distance of 45 miles—which takes us to Bass's Strait. The Tamar is of a serpentine form, with several arms or inlets; the scenery on each side is very picturesque. On its lakes and banks is a numerous variety of wild fowl—such as black swans, turkeys or bustards, pelicans, cranes, ducks, and teal. After clearing the Heads we take a westerly course along the coast for about 25 miles, when we enter the River Mersey, and land at Torquay, to stop the night at one of the hotels. On the following day we proceed on board our little steamboat, to get under weigh for a run to Emu Bay—a distance of about 35 miles—where we had to scramble on to the rocks in order to reach the shore, no proper landing-place being provided. From Emu Bay we proceed on horseback principally through the Van Diemen's Land Company's property, over as rough and rugged a road as can possibly be conceived, with an immense forest of timber and scrub on either hand, until we reach a half-way resting-place, known as the Hampshire Hills—a distance of 20 miles from the Bay. As we proceed on our journey the noted Valentine's Peak comes in view, with its conical top, 4000 ft. above sea-level; in looking eastward is Mount Everest; to the south the Cradle Mountains; and to the south-east the Black Bluff, with Mount Roland in the background.

After leaving Hampshire Hills station about a mile we enter an immense forest of timber and scrub for nine miles, so dense that it is impossible to get off the track without an axe to cut away the undergrowth. The lode for the whole length of the forest is a continuation of slush, bog-holes, and logs, and of such a wretched form as to defy a description. In leaving the nine-mile forest the road for a few miles leads through what is called an open country. It is free from scrub, but has the usual quantity of large trees, the diameters of which vary from 5 to 30 ft., in height from 60 to 350 ft.—all of which shed the outer bark, but not the leaves. At the present time the road from Emu Bay through the nine-mile forest—a distance of about 30 miles—can be avoided. The Van Diemen's Land Company having opened a tramway from the Bay to within about 16 miles of the Waratah township, which is situated on the banks of the Waratah river—about one mile from the foot of Mount Bischoff on the south. This river is crossed by a wooden bridge, with a wooden tramway on it, about 2 chains long, and about 20 ft. high. Close below the bridge is the Mount Bischoff Company's tin-dressing sheds, on the edge of the Waratah Falls of 100 ft., and nearly perpendicular. A few yards from the falls is the Don Company's shed; then comes the sheds and machinery for crushing and cleaning the whole of the stuff belonging to the Stanhope Company.

On our way from the falls to the mountain the first part of the road is on the basalt for about half-a-mile, when at a single step we are on to the clay-slate formation, where we enter the Don Company's section. Ground sluicing is carried on here by seven men; the average returns are about 3 cwt. of tin ore per week, yielding about 70 per cent. of tin. This appears to be the tail end of the tin ground; the workings are narrow, and the leader appears to be inclining westerly from the great deposits above. No doubt the original outlet was in that direction, of which there is strong evidence all down the tin creek gully, but no tin anywhere below the Don Company's works can be found to pay for working.

In proceeding up the company's tramway another half-a-mile we come to the foot of an incline with a double-acting tramway, constructed for the purpose of sending the tin-wash down to the falls to be cleaned. From the foot of the incline we turn to the left for the Slaughter-house workings, and to the right for what is known as the bottom faces, which is the commencement of the Mount Bischoff Company works, and is by far the richest and most extensive tinworks in this colony, and I believe the richest yet seen in all the colonies. The Mount Bischoff Company hold two 80-acre sections, which embrace the whole of the top of the mountain, except the east arm, and runs down a considerable distance over the north and west sides, on which there is no tin, as well as on the south side. This is the great tin depository of the district. From the sheds at the falls to the upper workings is over 1½ mile, and about 400 ft. high. The upper workings are in a flatish basin-shaped area, of several acres in extent, partially enclosed within a crescent-shaped ridge, and what appears to be an erupted eutritic porphyry dyke. This porphyry dyke runs or is traceable from near the summit of the mountain east for about half-a-mile. Near the upper edge on the north side of the basin the company's ground is a mass of what at first sight one would call a lode, but in reality is a massive jumble of irregular outline, and not yet ascertained in either horizontal or vertical extent. Of these outcrops, or lodes so called, there are two—one as already described as on the north side of the basin is also on the north side of the great porphyry dyke; the other, or what is called the south lode, is on the south side of the mountain, and about 100 ft. higher or nearer the summit, and is on the south side of the porphyry, which show great resemblance in character, and is no doubt the tin ore-bearing rock of this district. All the lower workings are traceable to the south lode, and the upper deposits belong to the north lode, which the washing out of the basin and the working up its side in that direction shows. The whole of the detritus is a tin-bearing porphyry and clay-slate, highly charged with sulphide of iron, closely cemented, and occasionally requires blasting. The depth of the stanniferous drift varies from 1 ft. at the sides to 30 ft. in the centre of the leads, and towards the outcrops, especially the north one, where a drive is now being put in to prove the extent of wash in a northerly direction. It is pretty well defined east and west. This is the source that the largest quantities of tin will in future be produced from by the company. The lower workings are nearly exhausted, and the Slaughter-house gully is not so rich in tin ore, and has a larger quantity of boulders among the drift. The total quantity of tin ore produced from these workings since the formation of the company or during the last four years is about 2690 tons.

Adjoining the Bischoff Company on the mountain, about one-third of the area of the said basin is in the Stanhope Company's section. This company took out of about two square chains of wash-dirt 240 tons of tin ore, and is returning about 6 tons of tin per week from the same deposit. They have worked up there a run of dirt to the top of the ridge, and have only the sides of the drift to work out, which are only a few yards wide on either side, beyond which to the east is scarcely a trace of tin can be found. To the west is the Mount Bischoff works, and the clay-slate bottom is stripped here all the way up the ridge. The Bischoff Company have a deeper lead, the bottom not rising so fast, and, judging from a shaft a short distance up the slope, which has been sunk to a depth of 34 ft. without striking the slate bottom of the basin, it is evident that either a hollow exists, or that a gutter runs along the foot of the porphyry dyke. No doubt this dyke once stood out of the ground as a high wall, the disintegration of which filled the hollow with detritus. Besides the three companies described there are about 30 sections, of 80 acres each, surveyed and taken up by other parties, covering the whole of the mountain from its summit downwards on every side to the Waratah river, which encircles more than half of the base of the mountain. Nearly the whole of these sections have been well prospected, and 1 ton 3 cwt. 3 qrs. 25 lbs. of

tin ore obtained that yielded 66 per cent. of tin, which proves the ore is not generally distributed over the sides of the mountain, but exists in local patches of limited extent, as described above. As regards the existence of true lodes of tin ore in the immediate neighbourhood of these deposits not one actually well-defined lode has yet been discovered, although the Waratah Company have spent a good deal of money in sinking pits and driving tunnels in their claim, which adjoins the Bischoff and Stanhope sections on the east, on what they call a true lode, but in reality are only fissures filled up by the washing down of the disintegrated tin-bearing porphyry above.

The climate of Mount Bischoff is very humid—as a rule, it rains nine months out of the twelve. The whole of the surrounding districts so far as the eye can reach is a dense myrtle forest, and the numerous large patches of a still denser scrub, known as the "horizontal." It consists of trees whose stems and branches have a circumference varying from 6 in. to 3 ft., and which have a peculiarity of twisting and interlacing themselves to such an extent as to become an impenetrable barrier to the prospector, and often reach to a height of 30 ft. At short distances through this network of "horizontal" scrub is tall myrtle, pine, gum, stringy-bark, and pepper-wood trees, whose branches, in meeting above the scrub, produce a gloom through which the sun never penetrates. The growth and decay of vegetation is very rapid, and often produce an overpowering odour. All trees decay from the centre outwards, and often form ridges of several feet high, that should be passed over with caution. The only other places known to contain tin ore in this colony are Mount Ramsay and the Hampshire Hills. The ore at Mount Ramsay is associated with such quantities of zircon, sand, tourmaline, chromate of iron, and titaniferous iron sand as to make it valueless. At the Hampshire Hills the quantity is not sufficient to pay, and is strongly mixed with the last-named iron sand. Various other minerals are found about here in small quantities, such as bismuth, with considerable quantities of wolfram mixed with it—also copper, silver, and lead ores, which I shall pass over, as my object is only to speak of tin. This brings me to the statistics, as follows:—

Tin ore produced from the Mount Bischoff Company's works, at Mount Bischoff, from the formation of the company, in 1873, to June 30, 1877:—

	Tons	cwt.	qr.	lb.
During the first two years, ending June 30, 1875	499	19	1	0
During the six months ending Dec. 31, 1875	299	9	0	0
During the six months ending June 30, 1876	250	19	3	14
During the six months ending Dec. 31, 1876	626	11	2	2
During the six months ending June 30, 1877	477	14	0	10

Total 2094 13 2 26
Smelted of the above ores by the company from June 30, 1875, to June 30, 1877, at the company's works, Launceston, 1323 tons 10 cwt. 0 qrs. 10 lbs. of tin ore, yielding 893 tons 1 cwt. 3 qrs. 3 lbs. of tin.

On hand at the mine on June 30, 1877, 393 tons 19 cwt. of tin ore.
Smelted for the public from June 30, 1875, to June 30, 1877, 55 tons 1 cwt. 2 qrs. 11 lbs. of tin ore, yielding 40 tons 14 cwt. 2 qrs. 23 lbs. of tin.
Smelted on account of purchase from June 30, 1875, to June 30, 1877, 2864 tons 17 cwt. 2 qrs. 8 lbs. of tin ore, yielding 1667 tons 4 cwt. 3 qrs. 2 lbs. of tin.

Total quantity of tin ore exported from Tasmania for the six months ending June 30, 1877, was 1662 tons, valued at £ 70,365 0 0
Of tin to June 30, 1877, six months, was 1347 tons, valued at £ 59,957 0 0

Total value of exported tin and tin ore £ 160,352 0 0
Exports for the month of June, 1877, 111 tons, valued at £ 6,385 0 0
" " 239 tons 6 cwt., valued at £ 10,422 0 0

Total value for June month £ 16,807 0 0

Names of works, or initials.	Quantity returned for six months, to Dec. 31, 1876.	Returned for six months, ending June 30, 1877.
	Tons cwt. qr. lb.	Tons cwt. qr. lb.
Eureka	21 13 2 16	4 13 0 7
Native Youth	10 1 0 1	29 19 0 27
Garibaldi	12 18 1 12	10 19 0 22
Mount Cameron Ruby	40 6 3 7	15 4 1 2
J. Congdon	0 0 3 27	2 10 0 26
Long	0 13 1 15	—
Clifton	9 18 2 25	3 12 2 18
Summer	2 16 2 18	—
D. Cambel	0 19 2 6	—
Crosby	8 3 1 7	1 18 1 1
Sapphire	1 3 2 16	—
Sappho	—	8 14 2 26
O. K. G.	0 1 0 9	—
I. D. G.	1 0 0 8	—
Fly-by-Night	2 5 0 8	1 16 0 10
Prince of Wales	5 6 0 10	—
All Nations	160 0 0 13	217 17 2 13
Tribute	7 15 2 16	3 2 0 12
Full Moon	120 9 0 23	In the exports above.
A. Gill	52 7 1 4	ditto
Surprise	14 8 2 13	26 8 3 12
Standard	18 5 1 1	2 8 2 4
Star of Peace	35 4 1 5	25 17 2 17
Globe	15 9 19	1 19 0 4
Golden Age	22 2 0 14	24 0 0 23
Pearse's Ruby Flat	1 3 3 15	35 0 0 5
Genat and Paterou	0 3 3 6	5 1 1 8
Spring	2 19 0 25	0 13 2 14
J. A. More's Fancy Flat	1 3 1 3	—
Nelson	25 8 3 5	11 10 3 11
Black Boy	19 4 1 0	21 9 2 0
Hit or Miss	2 15 2 13	3 18 2 15
Tamar	1 13 1 2	—
G. B.	3 8 3 9	4 0 0 7
Dorset	15 3 2 25	3 8 0 25
Braxholme	1 19 0 4	—
E. T. C.	23 17 3 17	4 2 3 24
Launceston & George's Bay	15 13 2 1	6 15 3 55
Star	6 1 0 24	2 4 2 17
T. P. O.	2 18 1 21	—
Thistle	0 13 0 14	—
M. K.	1 7 2 11	—
M. B. W.	13 17 0 3	7 16 0 7
Gang Forward	2 17 3 27	—
Independent	13 2 0 11	2 9 1 11
Star of Hope	0 2 3 13	—
E. (M. P. and W.)	0 1 1 25	—
Smith	2 8 2 3	0 6 1 5
Working Miners	1 4 3 8	—
Enterprise	2 15 3 9	10 2 2 7
City of Paris	0 11 2 28	—
Pig and Whistle	23 14 2 16	0 15 0 13
Bon Accord	4 12 3 20	2 2 0 8
Niagara	10 14 1 1	8 2 2 4
Murray and Kennedy	3 4 2 1	—
Tri	2 13 3 13	44 2 2 10
F. B. H. H.	2 19 3 15	1 0 2 24
Phial and Weymouth	1 11 3 20	—
Irvine and McLachern	41 14 3 17	11 13 1 1
Sacramento	2 13 0 17	139 19 0 11
Victor	4 12 3 15	—
Union	7 6 0 23	—
T. W. F.	4 0 1 5	—
J. S.	—	9 14 1 18
J. S. M.	—	5 13 2 24
W. W.	—	4 1 3 7
Elphinstone	—	—
B. and T. C.	—	—
W. Maggs	—	—
No Deception	—	—
White	—	—
M. T. Heaps	—	—
P. A., over Diamond	—	—
Thomas's River	—	—
Try Again	—	—
Hope	—	—
W. P.	—	—
O. K.	—	—
Main Creek	—	—
Ward and Ray	—	—
X. Y. Z.	—	—
Saxley	—	—
Celt	—	—
J. Cambell	—	—
Belle Tribute	—	—
Speck M. Leary	—	—
P. B. D.	—	—
Pearl	—	—
Kruska B. H.	—	—
Wotton and Co.	—	—
X. Z. (J. Scott)	—	—
A. Rankin	—	—
All Nations & Blue Martin	—	—
H. H. Gill	—	—
Tom Ting	—	—
N. T. M. Company	—	—
Arba	—	—
George Fry	—	—
A. G.	—	—
M.	—	—
E. T. H.	—	—
W.	—	—

Horne	9	19	2	0
Gillham	10	4	2	18
Frome River	40	5	0	7
Premier	1	10	2	4
Beryl	1	0	1	2
W. R.	3	0	3	5
Pioneer	0	12	0	24
B. and T. M.	1	5	3	4
C. M.	1	19	2	16
G., in Diamond	2	7	1	23
N. P. U.	9	9	0	27
Blacksmith's Hit	8	8	2	15
Imperial	4	1	3	16
W. T. F.	0	4	0	11
Speculation	6	7	0	19
Shamrock	1	10	3	20
Moriarty	0	13	3	22
J. C. M.	—	—	—	—
C. W. P.	—	—	—	—
S. P. M.	—	—	—	—
Peters	—	—	—	—
Bell's Tribute	—	—	—	—
Bigguy	—	—	—	—

The above list of mines does not include all the returns of the colony, as the mines at George's Bay, Blue Tier, and Thomas's Plains are in the exports above, and about 500 tons of this list is also shipped to Sydney, and included in the exports, as mentioned before.

Sticker, St. Austell, Jan. 30.

JOHN MUFFORD.

MINE MANAGEMENT—THE SCYLLA AND CHARYBDIS WHICH MANY ENGLISH AND FOREIGN COMPANIES ARE STRANDED.

SIR.—I have alluded in the Journal for years back to this one important matter, which does not sufficiently command the attention of our foreign mine boards. When I reported most favourably on the Van Mine of Llanidloes, shortly after the company was placed on the English market, I alluded to Capt. Williams in the following words: "You have a mine for one or two generations, but without the right man in the right place the mine itself might go the way of many mines in Wales. A mine without the man is no mine, and often an inferior mine is made into a mine by the man. In many cases the bad results of a mine are due to the head management of the London boards. The want of adequate capital often ruins a company."

The Van Mine directors at first made one of the chronic mistakes, they commenced with a working capital of 20000. I spoke in very strong terms on this point to the directors, and was backed in the matter by Capt. Williams, who will remember how this matter was discussed by us at the mine; 80000 more working capital was very soon afterwards subscribed, which made this mine what it is.

The Condes of Chile.—I quite agree with one of your correspondents, that in South American Republics a man thoroughly acquainted with the country, language, and laws should have been appointed. This is a magnificent property, but commenced with about 80000 working capital. I wrote to one of the directors of this company from Chile, pointing out the danger of working these mines with such a small capital.

Often mines are brought to a premature collapse through artificial liquidations. There exist one or two solicitor firms in London who are on the *qui vive*, at the slightest provocation, for liquidating companies. I do not mention their names, as they are too well known, and the Journal has often alluded to them. Fortunately the Emma Mine escaped the clutches of one of these firms by falling in time into the hands of the original vendors. The Flagstaff is in more danger at present from one of these liquidating firms than from debtors, buccaners, and blackmailers. So many flies round one drop of honey!

I enclose for publication what good, honest, and intelligent mine management has done for a very poor gold mine in California that has produced for 20 years dividends with greater regularity than any bank, commercial, or otherwise so-called legitimate undertakings.

San Francisco, Palace Hotel, Jan. 23.

ONE WHO KNOWS.

HONEST MINE MANAGEMENT.—We have had many harsh criticisms to pass upon the management of our mines, and especially of those on the Comstock, because of their reckless extravagance and dishonesty. In thus pointing out faults and condemning them we have been moved by a hope of making such mismanagement so unpopular as to force a permanent change for the better. As an illustration of what may be done and what should be done, approximately at least, in all the mines, we point with pleasure to the Sierra Buttes Mine, a little gold quartz mine situated in Sierra County, California; it is high up in the side of a steep mountain, and is as difficult of access as a mine well can be; it is about 70 miles distant from Truckee, the most convenient railroad station; and the supplies must be shipped to that point, and from there hauled in wagons through the rugged mountains 70 miles to the mine, being in this respect much less favoured than the Comstock lode. The office of the company at the mine is 5100 ft. above the sea. The vein has three principal branches converging into one in some places, and carrying usually about 11 ft. of pay ore; it was discovered in 1851, and came into the possession of its present owners in 1857; it is owned in London, and managed by Mr. C. L. Oliver of this city. The following is the record of the mine since it came under its present management:—

Year.	Yield.	Expenses.	Dividends.
1857	\$ 51,000	\$ 15,000	\$ 36,000
1858	55,000	15,000	40,000
1859	88,000	20,000	68,000
1860	120,000	37,000	83,000
1861	198,000	48,000	150,000
1862	166,000	54,000	112,000
1863	166,000	57,000	99,000
1864	90,000	75,000	15,000
1865	198,000	64,000	132,000
1866	214,000	70,000	144,000
1867	197,187	89,000	108,000
1868	229,254	91,000	138,000
1869	195,084	82,000	113,000
1870	206,402	84,402	202,000
1871	360,092	156,092	204,000
1872	387,037	154,037	233,000
1873	412,882	164,882	248,000
1874	466,150	186,150	280,000
1875	387,450	165,450	222,000
1876	393,112	161,112	232,000
1877	269,877	147,877	122,000

Total \$4,887,827 \$1,886,312 \$3,001,515
Prior to 1857 there had been extracted bullion to the amount of \$253,000, so that the total yield of the mine has been \$5,137,827, of which about 60 per cent. has been clear profit after paying all expenses, cost of machinery, mills, &c. There has never been an assessment levied upon the proprietors. The company own the mills and reduce their ores, and the cost of milling is but 76 c. per ton. The mine is worked at a depth of 1100 ft., the ore being taken out by tunnels in the side of the mountain, thus saving the cost of hoisting and pumping and furnishing better ventilation. The total cost of mining, milling, and management is only \$3.87 per ton, and it is one of the most economically conducted mines in the world. The ore is low grade, averaging less than \$9 per ton, and yet with this honest management it pays liberal dividends. We commend these results to the thoughtful attention of capitalists, in the hope that they may see the importance of giving more attention to California gold quartz mines, and also to honest management in any mines they may be interested in.—San Francisco Chronicle, Jan. 20.

NEW QUEBRADA COMPANY.

SIR.—The letter in last week's Journal from "A Holder of 700 Shares" has been much commented upon in the City by a number of shareholders who I have seen during the week, and the unanimous feeling appears to be that as the directors fail to conform with the requirements of the Articles of Association and the Companies Acts by not holding a meeting as therein provided, it behoves the shareholders to do so by requisition, in order that we may ascertain where the fault rests in sending over such low-grade ore. If the present board are incapable of conducting our business properly we must find one that can, and be careful in their selection that we pick out men who will conduct the affairs of the company openly, and not keep the shareholders in total darkness as to what is going on. I maintain that we are entitled to be informed as to the real state of things, and yet if one calls at the offices with a view to obtaining information the scantiest courtesy is shown, and such little account as may be imparted as to our operations is given out most reluctantly, and is more likely to mystify than enlighten. If any influential shareholder will only take the lead in instituting enquiries by the formation of a committee of investigation he will at once find himself supported by a large body of shareholders.

I am extremely sorry that events compel me to write in this strain, but believing, as I confidently do, in the value of our property I cannot do otherwise than say that I am convinced that all that is necessary to make the company a success is proper management, and I regret to say that at the present moment neither in Venezuela or at home do we find that our affairs are conducted satisfactorily, and for my part I think it high time that both Mr. Consul Frederick A. Hemming and the general manager at Tucacas,

Mr. Charles Campbell Downes, were superseded, as it cannot be denied that they have not carried into effect the hopes held forth prior to the construction of the railway.

A DISSATISFIED SHAREHOLDER.

RICHMOND MINING COMPANY.

SIR.—When our dividend of 7s. 6d. per share was announced in 1876, the directors stated they did not see why we should not have the same dividend every quarter (about 30 per cent. per annum), our week's run being then \$60,000 per week. As our week's run has been lately \$90,000 and \$100,000 I cannot understand your correspondent "Eye Opener" advising us to be content with 6 per cent. As to the damage the Eureka has suffered, I think it was estimated at \$8000 when the decision of the Court was given against us. I hope the shareholders will not be alarmed at "Eye Opener's" millions, and the majority will join those who ask for increasing dividend. Keeping a large balance arouses the greed of selfish individuals, and is generally finally spent in anything but the advantage of the shareholder.

AN OLD SUBSCRIBER TO THE
"MINING JOURNAL."

MINING IN THE EAST—No. XXVII.

CONTACT DEPOSITS OF THE BANAT.

ELISABETHA-GOLGOTHA.—Undoubtedly the most remarkable and inexplicable of the contact deposits mantling around the bosses of syenite, which extend meridionally across the Banat, are those found at the southern confines of the Koschowitz basin, along the junction of the lime-rock, with the felsite and garnet-rock. The repositories of ore are found in a series of enormous chasms and fissures in the lime-rock, and along its contact with the granulate and garnet. The latter is commonly of the kind called grossular, but grows occasionally ferruginous, as may be observed immediately above the mines, where the rugged summits of the Granatfels reflect a deep red. The chasm which imprisons the auriferous ores of Elisabetha is exposed superficially at the southern end of the lime-rock, close to its junction with the garnet-rock, and dipping diagonally at an angle of 45° to the north-east, follows the inclination of the contact rocks, which has a westerly dip of 20°. Towards the surface the deposit is enveloped in a very irregular quartzose lime-rock, dark-grey, blue, and often black in colour; but deeper the walls are often formed of granulate and garnet. In close proximity is the fissure of Golgotha, also productive of similar gold ores. Continuing north along the line of separation, between the lime-rock to the east and the felsite to the west, numerous burrows bear witness to the explorations made in search of gold.

As the deposits have been only partially opened it is difficult to recognise their forms—that of Elisabetha, which has been exploited the most perseveringly, continues from the surface to the deep adit of Franz Josef, 35 fms. below where one side of the somewhat triangular cavern is about 60 fathoms long. There seems little reason to doubt that the deposits accompanying the lime-rock in depth to where the latter rest on metamorphosed schists, or, as is not improbable, on the syenite; or that similar deposits exist along the junction north in cavations resembling those already discovered.

The metallic ores with their rocky matrices entombed in the crevices of Elisabetha and Golgotha are very singular and diversified, and so confusedly intermingled that at first sight they appear to owe their situation to aqueous deposition. On careful examination it becomes, however, unquestionable that the ores were segregated after the first violence of the disruptive action had ceased, and when the consequent heterogeneous debris had acquired a somewhat determinate and settled condition. The several depositories of mineral are more or less completely detached from each other by irregular lentils of lime-rock, which were probably splintered from the main mass by commotions propagated from beneath. They enclose smaller calcareous fragments and huge boulders and granulate, which, though rounded as if long rolled in rocky torrents, have assuredly obtained their sphericity through concentric decomposition. They are found most numerous and of the greatest magnitude in the inferior portion of the deposits, but they are also dispersed throughout them in the most fortuitous way. The more central portions are filled by what is known to the miner as Massenpochgang collections of quartzose rock, which together with large amorphous blocks of blackened lime-rock have been shattered into incoherent masses of small angular shreds. The whole of this perplexing conglomerate is more or less compactly concreted by the earthy matters released through the long-continued degradation to which the rocks composing it have been subjected. Near the surface the gangue has but little consistency, and resembles a loose breccia, but as the deep adit is approached it becomes more consolidated.

Gold, either free or enclosed in pyrites, is the metal which makes this complicated gangue so valuable to the miner; but though the whole of it is auriferous, yet the apparently lawless manner in which the precious metal is distributed renders the search after the richer accumulations very uncertain. The deposit of Elisabetha-Golgotha is far from thoroughly explored; but in general the gold may be considered to have concentrated itself in proximity to the walls of the containing fissure at the expense of the mass of gangue with which it is chiefly filled. The richest gold ores are found along the face of the limestone in a tough clayey flookan, or kluft, amongst the boulders of arenaceous granulate in quartzose matter, and in small quartz and calcite veins, which penetrate the lime-rock and granulate. The kluft, varying in width, from 2 in. to 3 ft., is penetrated by grains and thick threads of gold, with which is mingled much auriferous pyrites. Observation confirms the interesting fact that the more "squeezed" the flookan so much the more compact and rich are the ores. It is not in the boulders of granulate that the free gold exists, but in the spaces and interstices between them, and predisposition to condense itself concentrically on them is often manifest. The ore broken from around the boulders is sometimes yellow with gold, and picked parcels have been worth as much as 2000l. per ton; the disseminated pyrites is also valuable, and contains from 6 to 10 ozs. of gold. The veinlets of quartz and calcite found dipping into the granulate and lime-rock, though small, are exceedingly rich, and are not seldom worth 100l. per fathom, the mundie accompanying them being also highly auriferous.

Associated with the gold ores are many metallic minerals, which, though omnipresent, are so dissipated throughout the deposit that, with the exception of a few whose value is enhanced by the combined gold, they cannot be profitably extracted. The gangues bearing the free gold contain also many rare and interesting minerals—glauco-dot, alloclase, bismuthglanz, specular iron, smaltine, and its hydrate, cobalt blume—all having a remarkable percentage of gold. In the Massenpochgang, where visible gold is an uncommon occurrence, these rich minerals are not found, but are replaced by the baser ores—mundie, lead, antimony, and tovanite. The presence of alloclase, bismuthine, or smaltine, is a source of great encouragement to the miner, because of the certainty with which it indicates the immediate vicinity of rich ores.

The lime-rock owes its fissured condition to the same agency which metamorphosed the limestone into garnet-rock and the schists into fine grained granulate, and that this was the result of the intrusion of the syenite from beneath no one who has studied the surrounding district could question. The fissures which during eruptive action were gradually enlarged by fragments torn from the walls were at the same time filled with the debris of lime-rock, granulate, and garnet, proceeding from the contact rocks. Subjected to heat and moisture disintegration took place, and the deposit slowly becoming more compact during the final consolidation of the surrounding strata acquired the conditions necessary to precipitate the minerals contained in the percolating waters.

From the great fluctuation in the yield of the gold quartz it follows that the production must be very uncertain, so that whilst one year may give exceptionally large returns during another they may be scarcely sufficient to meet the cost; on the whole time of working, however, the mines of Elisabetha-Golgotha have given very satisfactory results. The ores extracted up to the end of 1876 gave a produce of 0.4103 of an ounce to the ton; but the gold actually contained must have exceeded half an ounce, as in consequence of imperfect dressing appliances the loss was considerable. The metallic minerals associated with the ores are highly auriferous, and

the gold seems to have been carried into them with the arsenic and sulphur. The iron pyrites in the poorest pochgang is small in quantity, and worth only 5 ozs. to the ton; but is found to contain in the rich quartz and calcite leads as much as 40 ozs. The three minerals—glauco-dot, bismuth glanz, and alloclase—enclose such a remarkable percentage of gold, and possess such a remarkable composition, that they demand special notice. Glauco-dot, a sulpho-arsenide of cobalt and bismuthine, are considered—in the proportion of two-thirds of the former to one-third of the latter—to form the mineral known as alloclase. Subjoined are given the analyses of all three:—

	Alloclase.	Glauco-dot.	Bismuthine.
Sulphur ...	16.22	19.728	18.278
Arsenic ...	32.69	47.400	—
Bismuth ...	30.15	—	76.487
Gold ...	68	750	320
Iron ...	5.58	4.326	852
Zinc ...	2.41	—	—
Cobalt ...	10.17	26.284	—
Nickel ...	1.55	—	—
Copper ...	—	—	606
Quartz, &c. ...	—	1.180	3.418

Total ... 99.45 ... 99.668 ... 99.961
The gold sold has contained one-eleventh part of silver. The auriferous mundie is sold at Freiberg at 7l. to 10l. sterling per ton net. The bismuth is also sold there at 22s. per lb.

The Oravica gold mines are unwatered to the depth of 35 fms. by the Franz Josef deep adit—a level driven at the expense of the county through the length of the Koschowitz basin, from the valley of Oravica to that of Maidan, to encourage mining speculation. This tunnel is substantially arched with stone, and furnished with a canal and iron tramway, and at intervals alternately on each side are short lateral arches, provided for the exploration of the deposits. It debouches at the Elisabetha reduction works, and the ores are, therefore, transported from the stopes to the stamps at an exceptionally low price. Until within the last three months the quartz was stamped by water-power, and, owing to the uncertainty of obtaining water both during summer and winter, the reduction of the ores proceeded in a fitful and unsatisfactory manner.

The means employed for separating the gold from its matrix is essentially the same as at Schemnitz. The stamped ores are run through two sets of revolving Hungarian bowls, and in them most of the free gold is amalgamated. The roughs and slimes then pass over numerous blankets—washed every 20 or 30 minutes—which entangle the remainder of the free gold, and the heaviest, therefore the richest, portion of the pyrites. By passing the blanket products over a Rittinger stosseder the mundie is obtained perfectly clean. To obtain the gold mechanically mixed with this mundie it is slowly passed through a set of Hungarian bowls, the residual mundie being sold at Freiberg as auriferous pyrites. The gold being very rough, this process extracts all the gold not combined with the mundie, but a portion of the precious metal escapes in the tailings enclosed in pyrites, owing to the want of dressing machinery.

Last summer a Husband's pneumatic one-head stamps was obtained from Hayle Foundry, and this has been erected and worked very well indeed, and as soon as the new amalgamators and concentrators are in running order the percentage of gold obtained will be notably increased. The pneumatic stamps has excited great interest in Hungary, and visitors come from afar to inspect the latest Cornish novelty. The amount of gold produced by the water-stamps to the end of 1876 has been about 500 cwts.

The Buda Test Cabinet have never recognised the importance of publishing statistics, and it is, therefore, now impossible to arrive at the metal production of the Banat. In a paragraph incidentally occurring in a pamphlet published at Temesvar many years ago it is stated that during the ten years ending 1842 the returns from the Oravica district were as follows:—Gold, 424 ozs.; silver, 18,076 ozs.; copper, 635 tons; and lead, 217 cwts. During the time the States Railway Company have possessed the mines—from 1857 to 1872 inclusive—537 tons of copper were produced and manufactured in Csiklowa.—*Maidanpek, Dec. 21.* EMPRESSARIO.

AN OAKEN COLLIERY SHOVEL.

SIR.—In a pit at Biddulph, in North Staffordshire, belonging to Mr. R. Heath, M.P., an oaken shovel was found a short time ago, under circumstances which may prove of considerable importance to those interested in mining archaeology. Wooden shovels have occasionally been found before in England and Ireland, and the date of their use has generally been ascribed to a time as far back as the Danes. In this case, however, from a few details I shall endeavour to give of the workings and position in which this one was found, it will clearly be seen that its date must have been very much later; in fact, I should not be surprised, from considerations of the workings in which the spade was found, if it had been in use somewhere about the latter part of the sixteenth century.

The coal here lies in a basin, and dips on the side where the old workings occur, at an angle of about 30°. A shaft 4 to 5 feet in diameter reached the coal at 14 yards from the surface, and from it the coal had been worked away by a mode which appears to have been what is called the "punch and thirl" system, or something similar. Close to the bottom of this shaft the shovel was found buried in the debris. The greatest depth of these old workings is not more than 16 yards, and they are drained, as is usually the case, by an adit from their lowest point, which must have come out just above the stream running through the valley. The shovel itself is in a perfect state of preservation, and as fit for service as the day it was made. It is cut out of a single piece of oak, and evidently has had some use, for the edge is blunted, scratched, and blackened by the coal. The head is the ordinary spade shaped, 10½ in. long, and square shoulders, 8½ in. broad. The whole length of the shovel is greater than that generally met with now-a-days, as it is 3 ft. 8 in. from the tip to the small handle on the top. These above facts being considered, one is undoubtedly led to suppose that this spade was used not so long ago as otherwise would have been anticipated, and that good mining work has been successfully accomplished (the above mentioned shaft being of admirable construction) with far ruder implements in many cases than we are aware of.

W. H. MERRITT, Assoc. R.S.M., F.G.S.

ELECTRIC ILLUMINATION.

SIR.—Although electricity is very fascinating as a means of illumination, I fear it is likely to prove almost as disappointing to inventors who trouble themselves with it, and to capitalists who expend their money upon it, as the search for the much wished for perpetual motion, notwithstanding the fact that the production of a perfect electric light is comparatively easy, whilst the production of perpetual motion is an absurdity. One of the most energetic workers in the field of electric and calcic illumination in this country is unquestionably Mr. Wm. Prosser, of Chelsea, though I can scarcely agree with him so far as to maintain that hitherto the nearest approach to a perfect light is the oxyhydrogen or lime light, arranged according to one of Mr. Prosser's previous patents. I quite agree with him that want of stability, coupled with the necessity of unremitting attention, in order to maintain the light in action, have hitherto been the great drawbacks of electric lights; but I feel satisfied that he is going altogether on the wrong tack in his search for a remedy. Mr. Prosser has had unusual facilities for testing and developing his inventions, yet he is at the present moment no further, practically than he was 25 years ago. I have witnessed all his experiments made in public during that time, seen the brilliant display of his lime-light on the embryo of Westminster Bridge, assisted at the trials in the Belvedere-road, and dined as a shareholder of the Lime-Light Company at the Crystal Palace, but only to be at last convinced that, so far as calcic illumination is concerned, "Le feu ne vaut pas une chandelle"—that is to say in a commercial sense.

In most instances, says Mr. Prosser, where electric lights are desirable to prevent accidents at sea, or as permanent signals for a variety of purposes, the defects mentioned are altogether inadmissible, and although they have been tolerated under special circum-

stances, the instruments are very imperfect. It is to remedy these defects that a new arrangement by Messrs. Prosser and Moore has recently been patented, but I fear the faultiness of the principle was so thoroughly proved in the case of the lime-light that little can be expected from it beyond pretty experiments. They propose in order to obtain an automatic supply of an electrode in a simple form to employ a stick of carbon enclosed in a metallic or other case, the front face of the stick being exposed to the action of the electric current. This is exactly the equivalent arrangement to that employed by Mr. Prosser for his lime-light, and the objection would be the same; the face becomes damaged by the intense heat to which it is exposed, and the light ceases until the clockwork brings a piece of perfect face into position. J. P.

ROCK-BORING MACHINERY.

SIR.—The courteous and complimentary remarks of "J. B." in last week's Journal, in reference to the application of the Darlington rock-boring machinery at this mine, are so different from the tone of many of your correspondents on the subject that I cheerfully furnish the additional information he solicits. The sinking lift (6-in.) was hung in companion screws about 11 ft. long and 2½ in. diameter, passing through stout transverse pieces of timber on each side of the lift, the whole being carried by two heavy logs placed the reverse way. We invariably charged ten holes to take out the centre core, which required close upon 10 lbs. of dynamite. Before blasting the lift was raised off the ground about 6 in., the guide cheeks in the platform being well wedged against the sides of the shaft, and the windbore securely stayed with larch poles. If these matters were properly attended to the shock consequent on the explosion was not so damaging as "J. B." supposes. The large doors being open, too, at the time gave vent, as it were, to the blast. "J. B.'s" further remarks on the simplicity, effectiveness, and durability of the Darlington rock-borer are fully borne out by working results. The type of machine we used was the ordinary cradle slide, the screw machine not being sent until the shaft was nearly completed. The short trial we made with it, however, demonstrates its superiority over the other kind as regards steadiness and rapidity of boring, and I have no doubt they will eventually be substituted for the cradle-slide sort.

Whilst on this subject you will, perhaps, permit me to add that if the Cornish agents where boring machines are employed would give to the mining public a thorough unvarnished statement of what is being accomplished, we should be more satisfied than with the bald assertion that so much ground has been cut in a given time. We hear of over 5 fms. being driven in one week at Carn Brea, but not a syllable as to the number of machines or men employed, nature of ground, and cost, including repairs of machines. The latter item, though of no small importance, is, it appears, purposely concealed. Then, again, we hear of "admirable results being produced" at a mine not a thousand miles from here by the Ingersoll drill, when I can positively assert that only three holes, 2 ft. deep, had been bored after the machine had been erected ten days. Truly a wonderful achievement. Such misleading, not to say untruthful, statements will certainly not advance the mining interest in the manner that your correspondent so confidently anticipates, and it speaks anything but favourably for the merits of the rock-boring machinery to require the assistance of the pen to make it as effective as others of considerably less pretensions. JOHN BARKELL.

Rushen Mine, Feb. 12.

TREATMENT AND SEPARATION OF ORES.

SIR.—Frequent reference is made in the Journal to the difficulty experienced in profitably treating mixed blende and lead ores, and I believe that the failure of the Burrow and Butson Company was entirely due to the inability of those concerned to separate the blende from the lead commercially. Now, I was not aware of any electric action in either lead or blende, but I have just been reading the description of an invention patented by Major Frank Bolton, of Westminster, which leads me to suspect that I am in error. He states that his invention has for its object the separation of iron and minerals containing iron from other substances with which they are mingled, but is more particularly applicable to the separation of iron and copper pyrites from blende and other substances. He states that the invention consists in calcining or roasting mixed ores containing pyrites in any suitable form of calcining furnace, retort, or muffle in an atmosphere of superheated steam, either with or without the admission of air or gases, by which means he firstly converts the sulphide of iron, or the iron, in the mingled sulphides of iron and copper into a highly magnetic oxide; and, secondly, prevents almost entirely the formation of soluble sulphates of copper and zinc, which are partly formed when the calcination is performed in atmospheric air, and which would enter into solution in any subsequent treatment with water.

Major Bolton further explains that the mineral to be operated upon, after being reduced to a convenient size for separation, is placed in a calciner or calcining furnace of any suitable form, and heated in the ordinary manner, but in lieu of allowing a large volume of uncondensed air—that is to say, air whose oxygen has not been combined with the carbon of the fuel—to enter the calcining chamber, as is done in the ordinary methods of calcination, he either excludes atmospheric air altogether, in which case he employs a close or muffle form of furnace, or he reduces and regulates its admission, as found most expedient, and causes a jet or jets of dry superheated steam to be introduced into the chamber of the furnace, by which means the whole or a part of the iron present is converted into a black or magnetic oxide. The particles of magnetic ore are then separated from the non-magnetic particles by the employment of a "magnetic separator" of any usual or suitable construction. It is sometimes the case, especially when the material under treatment is in a very fine state of division, that the force of gravity is not sufficient to cause the non-magnetic particles to disengage themselves, and fall from the magnets, he causes steam, air, or water to play upon the magnetic surfaces with sufficient force and volume to remove the non-magnetic particles, but still not so violently as to overcome the adhesion of the magnetic particles.

Two very important discoveries are here announced. Not only does Major Frank Bolton require to convert the sulphides of iron into magnetic oxide of iron, but he must convert the copper pyrites also; otherwise he would be no nearer the separation of the copper and blende—that is to say, by electricity. It must be assumed, therefore, that he converts the copper pyrites into magnetic oxide; and if he can do this there is no reason why he should not similarly convert galena, which is merely sulphide of lead instead of sulphide of copper, into a magnetic oxide also. It seems to me that unless he can really effect these conversions, and how he will do it is beyond my comprehension, there is very little novelty in the invention. Feb. 11.

F. T. K.

NEW TYLLWYD MINING COMPANY.

SIR.—I observe in last week's Journal you state that at an adjourned general meeting of this company, held on Jan. 15, the report and accounts were passed. I would point out that it was not an adjourned meeting, and I think the circumstances in which the report and accounts were passed should be made public. The late Chairman, who has resigned in consequence of general disapproval of the present management of the company (he having been always outvoted at the board by Capt. Hamilton and Lieut.-Col. Ferris, the only other directors), held proxies for 32 shareholders, representing nearly one-half of the capital of the company. But Capt. Hamilton, who was Chairman of the meeting, acting under the advice of the solicitor of the company, who is also his own private solicitor, rejected these proxies, because they had not witnessed to the signatures of the grantors in each instance. I may mention that at previous meetings of this company, and also of the old company, the proxies when in favour of Capt. Hamilton had never been witnessed, but had always been acted upon.

Besides the late Chairman and myself there were present at the general meeting only six persons representing themselves to be shareholders; one of these it was discovered held no shares at all,

another shareholder only held one share, and that had not been paid for, consequently the number of actual shareholders was reduced to four. Capt. Hamilton was one of these four, and Lieut.-Col. Ferris, the only remaining director, was another, so that besides the late Chairman and myself there were only two *bona fide* shareholders who were not directors to constitute the general meeting. Under the circumstances, therefore, of the disallowance of the proxies of the 32 absent shareholders, whose votes were ignored, the late Chairman and I declined to take any part in the proceedings of a meeting so constituted, and the accounts were passed; but more will be heard of this strange company and its present directors before long.

D. FORREST,

One of the liquidators of the Tyllwyd Silver-Lead Mining Company.

PUBLIC COMPANIES IN THE FUTURE.

LIMITED LIABILITY V. THE COST BOOK SYSTEM.

SIR,—I thank your correspondent, Mr. R. Tredinnick, for his eulogy of my feeble efforts on the subject of "Public Companies in the Future," in the Journal of the 26th ult., and I am sure that he will not misunderstand my attempt to vindicate the principle of Limited Liability, which is generally believed, on the whole, to have greatly benefited the country, and perhaps as much in what it has shielded us from as from the actual gain derived through its operation. We cannot forget that we have been passing through a crisis almost unprecedented. Large and wealthy companies have come to a standstill so far as profits are concerned, many have failed, and a large proportion of new ones have been wrecked, but still the country financially is not unsound. This is in a great measure, I take it, that the Limited Liability principle, and not the unlimited, has been in existence. I shall proceed hereafter to show why this is so.

The first-named system has been in force now for several years, and we have had ample experience of its working; and the time has come when a comparison may be fairly drawn between it and the Cost-book, and some estimate made of its value. The unlimited form of company had been on its trial for many years previous to the introduction of Limited Liability, and had been proved totally unsuitable for undertakings such as people with only small means could embark in. Large companies and men of large capital were interested in keeping up that system, because it gave them practically a monopoly of business; but when it came to people who could only command a few pounds, but wished to make that small sum productive, how were they to become shareholders in concerns that required thousands? The only way for them was to let their money remain idle—or, in other words, to hoard it. But even in a company where small sums could be invested what prudent man, having invested his little all in it, would put himself in a position that might in any moment land him in bankruptcy, for we must bear in mind that having been once registered as a shareholder he became to all intents and purposes a partner, and was liable to the extent of "his last acre and his last shilling," as the phrase went. Now, it will not require any argument of mine to prove that this system must have been a great clog upon many legitimate trading companies, inasmuch as people are very seldom found who voluntarily undertake unknown risks for the purpose of getting doubtful profits. Any proposal, therefore, that could utilise small sums without placing them under such an incubus as this would naturally be hailed with delight.

Thus absolute necessity gave birth to Limited Liability. The wealthy classes, as we have said, looked with disfavour upon the system, because they did not wish small sums to rank with their own larger amounts for dividends, either through not knowing the "power of pence," or from a wish to maintain their monopoly. But the despised "drops" have developed into a mighty ocean, and through them Limited Liability has done more to increase the trade of the country than in my opinion generations would have sufficed to do under the unlimited.

But we need not go back to 15 or 20 years ago, when the Cost-book System had undisputed sway. It is our present experience that of all the barbarous methods ever invented to drive a steady going people into open disaffection this is about the worst. Let us imagine a case. An individual in "good feather," thinking that he shall never know the pinch of poverty, puts a few hundreds into a Cornish mine of great promise. The concern for a time flourishes, and so does he. But at length there is a pause, then a relapse, and then a complete break down in all the bright promises of a few years previous. The man has to contract his expenses, and very materially curtail his outgoings. There has, perhaps, been a large depreciation in the metal market, and the once flourishing mine is working at a loss, a heavy one it may be. The proprietors—local of course—determine the mine shall go on. A call is made, without the individual aforementioned having an opportunity to demur. He cannot sell or relinquish; the only thing open to him is to pay, or suffer the consequences, which means to have the bailiffs put into his house, who generally help themselves pretty freely to the best articles he has; or if he has nothing there are but few chances of his ever rising again with this "old man of the mountain" about his neck. This is not fancy but fact. I have known many cases of a similar kind, and about the only way out of the difficulty is that if you can get a "man of straw" to take the liability off your shoulders for a consideration it is cheap at almost any price. And if there was ever a justifiable fraud it is this; but the system that makes it necessary must be an unrighteous one. "Caveat emptor" should be the motto of every man under the Cost-book System, for when he has once made a purchase he does not know where he may find himself from one month's end to another.

It is not possible within the compass of a letter to go fully into all the details of a vast subject, and I must content myself here, as a finale to this part of my task, to suppose that during the late great collapse in companies, the aggregate capital of which, embracing a few years only, amounting, as we are told, to very near 600,000,000, has been on the unlimited principle, the consequences would have been appalling. This 600,000,000, although it is a vast sum, even if had been all lost, only represented what people could part with, if not without inconvenience, certainly without absolute and irremediable distress, but had it been possible to call up an equally large amount what a tale it would have told. Ruin is too mild a term for what would have followed, but this is just the principle involved in the unlimited system. But what about Limited Liability? Well, this latter, as we have seen, enables a man of small means to participate in the profits of a business to whatever extent he can afford, which it will be acknowledged is a great benefit, and leaves him free of future burdens. He risks nothing beyond, and if the thing is a success he receives his fair proportion of interest, and if it is a failure he loses his investment. I admit that is bad enough, but it does not cloud the whole of his future through dread of coming ill.

It may be objected, however, that Limited Liability companies do not always work out so smoothly; that sometimes a company is composed of large-price shares, of which only a small proportion is called up, leaving the balance for contingencies. But is it not a perversion of language to call it limited? To all intents and purposes it is unlimited; and there is no doubt in my opinion that this serious defect should receive the attention of the Legislature; but this defect does not in the slightest degree touch the principle, any more than it would alter the fact that a man who could carry 200 lb. would be crushed by 1 ton, notwithstanding its being argued that it was a limited quantity. It would be absurd, and so is this so-called Limited Liability.

To sum up the whole of these remarks, I feel sure that any general return to the Cost-book System should be, and would be, universally deprecated; for what is to be gained by its re-adoption? We have certainly very much to lose. How does the matter stand? It is proposed that for an instrument which enables a man to see where he is financially—which, by the way, must be a great boon to every business man who invests his savings—to substitute a state of "fog" or indefiniteness, which renders his position dubious under the best of circumstances.

Any method that enables a man to pull himself up quickly when he is getting the wrong side of the account must be beneficial, but its advocates cannot say this of the Cost-book System. I would not

be so foolish as to say that money has not been made under it; in fact, enormous sums have been made, but they would have been much more safely gained under the Limited Liability. Neither will I say, as before indicated, that this last-named system is perfect, but I do say that this is the more excellent way, and that in my belief it would be a calamity if the country were to re-adopt the Cost-book System.—79, Cornhill, Feb. 14. M. F. DORMER.

THE FORMATION OF COMPANIES.

SIR,—In the Journal of March 24 there is to be found a long paragraph, headed "The Formation of Companies," and giving the substance of a bill then about to be introduced to Parliament as "Mr. Chadwick's Bill," contemplating some very important amendments of the Acts of 1862 and 1867. Since the date in question I have seen no further reference to it, nor have I been able to learn if it ever became the subject of legislation. Can you Sir, or any of your readers, inform me and many others who are equally interested in companies' affairs if the proposed measure was ever brought before Parliament, and if so what was its fate? H. LAMBERT, Queen Victoria-street, Feb. 12.

METALLIFEROUS MINING IN NORTH WALES.

THE OLD DYLIFFE MINE, AND THE PLYNLIMMON DISTRICT.

SIR,—In a geological point of view there is not a more interesting mining district in the Principality of Wales—or, perhaps, none so interesting—than the Plynlimmon range, with such a variety of stratifications, while the clay-slates of numerous kinds predominate. The mineral lodes at the Old Dyliffe Mine pass nearly east and west through the stratification named by the late Sir Roderick Murchison as the transition clay-slate; and it is this stratification that forms nearly the whole of the Plynlimmon range. But there are to be seen numerous dykes of mountain grit traversing or crossing the clay-slate mostly in a north and south direction, while trap and eruptive rocks are frequently to be met with. Thus the hard mountain grits and trap, with other varieties of rock, which the lodes passing through the Plynlimmon clay-slate come in contact with, have a most beneficial influence upon the mineralisation of such lodes. Indeed, it is a well-known fact to expert miners that lodes in such a position are always the most prolific for mineral; while the whole of the stratification surrounding a lode has an insipid degree of sameness in all directions. An ominous conclusion may be drawn, though occasionally an exception may be met with, but it is very exceptional indeed.

It is unknown at what time in the past history of Britain mining for silver-lead commenced at the Dyliffe, but it is obvious that mining was carried on there at an early period, though it must have been at first, and no doubt for some centuries afterwards, of a rude and primitive kind, and is mostly always in such places attributed to the Romans. But I think it is not too much to suppose that mining at the Dyliffe, as well as many other places in Wales, had been carried on by the Britons, possibly anterior to the Roman era, or, as the late Mr. Mathew Francis would have put it, long before Julius Cæsar poked his Roman nose into this country. And from the time it was first commenced and carried on down through the distant ages of the past until the present time, with various success, of course, at different times, there must have been, according to the best and most careful computations that can be made, at least 3,000,000 sterling worth of silver-lead ore taken from the Old Dyliffe Mine, and that sum is most likely far below the actual value of the ore obtained. At what time the Dyliffe Mine flourished most is not known, but it was worked with great success some 30, 40, and 50 years ago by the late Mr. Hugh Williams and Mr. Pugh. Those gentlemen after battling with the mine for some years succeeded in bringing it into such a successful condition that they eventually reaped large fortunes for each from it. After the deaths of the above gentlemen the mine fell into the hands of the late Mr. Cobden, M.P., and Mr. John Bright, M.P., and a few other Manchester gentlemen, forming a private company, and by whom the mine was worked with marked success for a number of years. This company immediately the property came into their possession set about reopening the mine in the most approved manner, under the auspices of Mr. W. Spooner and their manager on the mine, the late Mr. Edward Williams; they sunk new and vertical shafts, doing away completely with the old folly of inclined, expensive, and ever inconvenient shafts sunk on the course or incline of the lodes. The best and most approved machinery was adopted, while everything cumbersome and unnecessarily complicated was studiously avoided. Large and well-built water-wheels were erected, and all the water of the neighbourhood as well as of the mine was carefully husbanded, so that in a very short time the Old Dyliffe Mine, under the management of those gentlemen, assumed one of the most cheering and successful appearances at surface and underground that can well be conceived for any mine to do, and of course the natural result of such an excellent and judicious management was, with also a rich lode for mineral, large and unusual profits for the company.

Some time ago the above proprietors sold the mine to the present company, and they have an opportunity, if they like to avail themselves of it; in fact, I can have no manner of doubt about it, that with a moderate capital for outlay, of bringing the Dyliffe Mine into as flourishing a condition as ever it was in its palmist days, or, probably, more so than ever it was in times past. A new lode has been discovered south of the old lode from which the ore has always been taken. This new lode, if rightly considered, should be looked upon as a new fortune to the Dyliffe Mine, inasmuch as it has never been touched, and is, therefore, whole to surface, none of the ground having been taken away. With only about 20 fathoms, more or less a little, to drive cross-cuts so as to intersect it from the old mine, and at such depths and points longitudinally as they may choose to avail themselves of this presenting facilities for development that experts capable of appreciating the position would not, one would think, be slow to take advantage of. Moreover, it is manifest from the discovery of the new lode, and what has already been done amidst difficulties to prove that it is well mineralised, also the many improvements recently introduced by the mechanical department as regards the machinery at the Dyliffe; that there is no engineering difficulties to be expected at the Dyliffe so as to prevent a most unique development in so far as the management is concerned, although there may be other difficulties of an important character. The new lode is much of the same character as the old, to which the workings have always been confined, and passes east into the Pennant Dyliffe sett, an extensive piece of mining ground to the east of Dyliffe Mine, presenting many facilities for development, as well as having abundant water-power. In addition to the newly discovered lode at the Dyliffe they have another very strong lode on the north side of the old workings, called the Pencerrig lode. Cross-cuts could also be driven at different points from the old mine, so as to open up this lode as well as the other; to drive one bit of a cross-cut where there is such a long range presenting itself is simply child's play, they should be driven for intersection at different points both for depth and longitudinally. Further north, again, they have the Cafarth lode passing through the Dyliffe sett. It would be difficult to meet with another old mine that has been worked largely anywhere in North Wales presenting so many rare facilities for a noble development as is now presented at the Old Dyliffe, and I say it advisedly.

In passing south from the Dyliffe Mine, and on the top of the hill overlooking the Dyffwngwm Dingle, for we can scarcely call it a valley, we come to one of the greatest errors ever committed by any mining managers having actually the interests of their employers at heart. I mean the mammoth looking steam-engine on the top of the Dyliffe Hill, having, I believe, double 80-in. cylinders, for the supply of which they have to cart their coals for more than ten miles—coals that have already had a long and expensive carriage by rail, and this was done by the late company (not the present one) and their managers in the face of the fact that close at hand—nay, in the Dyffwngwm valley—there is abundance of water sufficient to work one of the largest water-wheels they can possibly erect, and would have done the work far better than the steam-engine in this case. Undoubtedly this engine is a fine piece of workmanship, and in the

right place would be the right thing, but at the Dyliffe it is evidently the wrong thing in the wrong place. Had the engineers availed themselves of the ample water power close at hand it would have saved the company a large amount of money yearly, which might have been used to make further explorations of the lodes. Will the present company pardon me for volunteering my advice to them—that is, to have it removed as soon as possible, even if they had to be at the expense of removing it to Jericho or the Antipodes, or anywhere else where it will be far enough from the Dyliffe, so that it can do no more mischief for them there, and to take advantage of the water close to them; it will in a short time save them a great amount of money for coals and the very great expense of carriage of coals to the Dyliffe; at present it serves best to commemorate the blunders of those who caused it to be brought and erected where it is. A few hundred yards west of where stands this rhdamanthus of monstrosity and we come to the old Dyffwngwm Mine, with its machinery looking as if it was all on strike. Why this mine should be idle must be best known to the owners, for I am informed that there is a fine course of ore in the bottom level. Further west and on the Dyliffe lodes are the Nant Du and Rhyddgen Mines, both of which I am told are looking very promising for future success when well developed.

About two miles due south of the Dyliffe Mine and we come to the Cefn Hafod and South Dyliffe setts, upon which there are several east and west lodes, with cross lodes as feeders. A level has been driven upon one of these lodes for a short distance of about 15 fms., thus discovering one of the most beautiful and best-defined lodes I think I have ever seen. This sett is a very extensive one, and has an abundance of water power bounding it on both sides, so that no steam power will ever be required here; the lodes on this sett are of the finest possible character for making large deposits of mineral. Moreover, this is a new sett, and not like an old mine that has been worked for years, having its riches taken away. About two miles west of South Dyliffe is Snowbrook Mine, with a lode passing at the point now being worked through a strong dyke of mountain grit, with a strong mixture of high percentage lead ore all through the rock. It is very probable if the company could succeed in sinking their shaft down somewhere approaching the junction of the slate rock with this grit, that a fine deposit of lead ore would be met with. A few hundred yards east of the present workings, on this same sett, is a lode having one of the strongest go-soms on the back that I have ever seen, yet there has never been any trial on this lode, and why is a mystery to me; this lode is embedded in clay-slate.

Sir, I have taken more liberty with your space and with my own time than I intended when I commenced this letter—indeed, it would take a series of letters to do justice to the old Dyliffe and Plynlimmon district; but in short it is very clear to the observant that the old Dyliffe and Plynlimmon district is a wide field of mineral wealth, that only requires the necessary capital to make it the most flourishing lead mining district in the kingdom. However, great care should be taken when selecting, as selection is the great rock upon which so many companies have split and come to grief. It is really curious to notice with what absolute defiance capitalists set all the laws of Nature at naught when selecting a place to expend their money in searching for lead or copper ores—all the phenomena that ought to be consulted is, as if purposely, avoided; and after spending a lot of money to the amount, perhaps, of many thousands of pounds, it almost invariably ends in disaster.

Mining ought to be as safe as almost any other undertaking if skilful and careful attention were paid to selection. These disasters have a double evil—in the first place, the money is lost; and in the next such disasters have a tendency to bring what is otherwise a rich mining district into disrepute with capitalists. Dr. Darwin would have done well by mining adventurers when writing his book upon natural selection had he added a chapter on the natural selection of mineralised lodes for the expenditure of mining capital.

Feb. 13.

CARACTACUS.

THE LLANRWST LEAD MINE.

SIR,—I will thank you to afford me space in your esteemed Journal to review what appears to me a most extraordinary report published by Mr. H. G. Sharp in his circular dated Jan. 29, and signed "Inspector." The extraordinary character of the report is in the suppression and mutilation of facts supplied to "Inspector," so-called by his informant, and the outrageous violence done to others which are published—that is to say the forced construction put upon them by that disingenuous "Inspector," or Mr. H. G. Sharp. I mean the illogical and untruthful conclusions arrived at from the description given of the property. A more palpable calling of light darkness than is by them portrayed I have never witnessed. It is stated the shaft is not being sunk at present, I ask "Inspector" if his informant did not state that preparations were being made, and that its sinking would be resumed in a few days, which was done? Did not "Inspector's" informant state to him that the 14 fm. level west of shaft had intersected the cross-course, and was then being driven on it towards the lode, and that he expected it would be cut good as a good lode was gone down on that side of the shaft from the level above, and that the stones of ore referred to were found in the cross-course?

"Inspector" states that 50 fms. have been driven in the adit on the caunter lode, 10 fms. west and 40 fms. east of the shaft, and that the end going east is producing 35 cwt. per fathom; that some ground has been stoped in the back, but that 400 fms. are still standing there, and estimated to yield 600 tons of lead ore. Now, if 400 fms. of ground are still standing over a length of 50 fms. 9 fms. high, it would appear that only 50 fms. of ground have as yet been stoped—50×9=450; 400 fms. still standing shows 50 fms. as the quantity stoped. According to this showing 100 fms. of ground only have been taken away at the adit, and a little in the 10, above adit, besides a very little done by the present proprietors on the main lode. From whence, may I ask, was produced the 260 tons accounted for at the time of "Inspector's" writing? We had then sold 100 tons, and "Inspector" states that 40 tons were then dressed, besides 600 tons of undressed ore, which he estimated would yield 120 tons of clean ore—if not from the adit and the 10, above adit. Did it occur to Inspector or to Mr. H. G. Sharp that 120 tons of clean ore to be produced by 600 tons of undressed ore is at the rate of 20 per cent., just 8 per cent. above the average of the Van Mine produce, and yet the fact contained in that statement is used in depreciation of the Llanrwst Mine? Could anything conceivable be more absurdly audacious? "Inspector" states "that but little has been done by the present proprietors on the main lode." But did not his informant tell him that that little included the sinking of the diagonal shaft to the depth of near 9 fms. on its course under the adit, and that the lode there was producing 2 tons per fathom? "Inspector" states that a winze is sunk from the 10 above to the adit, but suppresses the important information that a winze is also sunk from the adit to the 14 below, in which the lode will produce 2 tons per fathom on an average, according to "Inspector's" informant's judgment. And did he not also, instead of stating that the ground was hard throughout the mine, state that it was much easier at the 14 than in the level above?

The present price for driving the eastern end at the 14 is 4l. per fathom, and for the western end 3l. 10s., for we have again met with the lode in that end, and are now driving on it. And notwithstanding "Inspector's" informant stated that the lode at the adit all along was best in the bottom, that the lode in the winze sunk from the adit to the 14 fathom level produced 2 tons of lead ore per fathom, and that at the 14 it was of equal value, yet he had the audacity to limit the resources of the mine to the 600 tons of ore estimated to be still standing in the back of the adit, and treats the estimated produce of 2 tons per fathom at the 14 fm. level as a very meagre yield.

I just now stated that the price for driving the 14 east was 4l. per fathom, and that "Inspector's" estimate of the value of the lode there was 2 tons per fathom. Now, at 4l. per fathom, six men to earn fair wages must drive 8 fms. per month; that multiplied by two gives the result of six men's driving as 16 tons of lead ore per month. And 8 fms. by 13 fms., the height between the 14 and the adit, gives just 104 fms., which multiplied by 2 tons per fathom, "Inspector's" informant estimate of its value shows 208 tons of

lead ore to be laid open by six men in one month; yet this unscrupulous adversary presumes by sheer impudence to blur, or rather to conceal, such facts for the purpose of misrepresenting and damaging this company's property. I have never before witnessed such a conglomeration of ignorance, audacity, and inconsistency as is contained in that report and circular. There is a postscript appended to "Inspector's" report by Mr. H. G. Sharp, which begins and reads—"I have received the above report, and have every reason to believe it is most trustworthy and truthful in every respect;" from which it would appear that the garbling of—to them—unpalatable facts was perpetrated by "Inspector." It would be interesting to know if Mr. H. G. Sharp saw "Informant's" answer to "Inspector's" long list of questions, and if so I shall be obliged if he will publish the whole thing *in extenso*. I earnestly desire an answer to the questions I have put to them above, after which I may probably have something more to say concerning such nefarious practices.—Feb. 12.

ROBERT KNAPP.

YSTUMTEAN LEAD MINE.

SIR,—In the Supplement to last week's Journal reference was made to this mine. The lode in No. 3 west is now very fine, far better than anything I have seen, and is all the more important being in new ground; it appears that the level has been driven on the south part of the lode, which is soft, and latterly a cross-cut has been driven fully 3 fms. north, and a drift continued on the north parallel with the former level, and it is in the west end where the discovery, or rather improvement, has taken place. Uren's estimate is much below its value, and it has all the appearance of lasting. They have good ore all along the drift, and also in the eastern end; besides this there is a winze sunk about 20 fms. east in the same level, and very excellent ore in this also. Altogether there is about 20 tons of ore broken in the mine, and 10 dressed ready for sale, and all points looking remarkably well, far better than at any previous time, and the prospects for an early output have greatly improved during the past two or three months, but particularly so by the recent discovery, and the condition of the mine is altogether altered for the better.

GEORGE GREEN.

MINING IN CARDIGANSHIRE.

SIR,—The important discoveries mentioned in last week's Journal as having been made in Cardiganshire are even in these dull times directing a good deal of attention to this district. I was asked only very lately to inspect one of these mines—Blaen Caelan, which having for some time past been in the hands of a few gentlemen steadily developed is now I hear about to be put into possession of a company to work it still more effectually. If the capital should be put at a moderate figure I should think the company will have but little difficulty in placing any shares they choose to offer a fair value put upon them in any of these properties, and I venture to predict that there will be more prizes than blanks in Cardiganshire during the coming year, and from what I saw at Blaen Caelan I should say it would stand as good a chance as any of them.

THOS. ROSEWARNE.

MINING IN CARDIGANSHIRE.

SIR,—I am glad to find by George Green's letter, in last week's Journal, that the lead and silver mines of this famous district are opening out so well, and with such marked success, especially the Mynydd Gorrddu and Court Grange Mines. The champion lode which runs through the former property cannot fail to produce an immense wealth to its fortunate proprietors; and the latter property, being so rich in silver ore, will prove a mine second to none in the Principality, having been supplied with all the best dressing and pumping machinery of modern times. To the east of Mynydd Gorrddu are the Cefn Gwyn Mines, which are being worked by a private gentleman (Dr. Walker), who has made some fine discoveries of silver-lead down in the valley near the River Lerry, whilst the deep adit level, going west towards Mynydd Gorrddu has skimmed the top of a fine deposit of lead ore. In my opinion there is nothing wanted here but more depth; the necessary machinery has been erected and water-power obtained with a view of attaining that end. To the east of this, upon the same lode, are the Tynewydd Mines, one of the finest mineral properties in Cardiganshire, all nearly virgin ground, with the exception of two shafts sunk on the lode to a depth of 15 or 20 fathoms respectively, which produced from 80 to 90 tons of silver-lead ore, worth 17½ per ton. The outcrop of this great lode can be traced for hundreds of fathoms above the surface, showing in places ribs of ore 6 to 12 in. wide. There is good machinery on the spot, and plenty of water-power in the grant for all purposes and at command. With your permission I will furnish you with more particulars about the property next week, also about the mines to the east.

VERITAS IN FONTO.

CARDIGANSHIRE—ABANDONED MINES.

SIR,—Mining in Cardiganshire has been for several years past very much neglected, with the exception of a few mines where a large amount of ore ground was laid open ready to stope away. The object of mining companies seemed to be to scrape out all the ore available, and as soon as it was scooped away the machinery was sold, and mine after mine has been abandoned until those mines kept going became very few and far between. However, during the year 1877 several of these abandoned mines have again been taken up and started to work anew with a considerable degree of success. Penfforddgoch Mine has been taken up by a local party, who have lately disposed of it to a wealthy party from Birmingham. They have a lode in the bottom of the mine producing about 2 tons of lead ore per fathom. Esgair-hir has also been taken in hand, wherefrom an enormous quantity of ore has been sent away by former companies, although the depth attained is only 30 fms., and I believe the mine is now looking better and the lode richer than ever it had done in the memory of any person now living. The Blaencaelan also had been abandoned for several years, but of late it was taken in hand, and it is now bidding fair to rival Esgair-hir, its next neighbour. Court Grange has been idle for a good many years, but it is now in the hands of an influential London firm, and is opening out well, and with vigour. The lode in the 14 fm. level east will, I am told, yield 2½ tons of silver-lead ore per fathom; many other points in the mine are opening out well. An important discovery has been made lately at Camdwrnawr under the very soil in costean pits; this is on the Bronfloyd lode, and it is likely enough to open out very satisfactorily. At New Bronfloyd they have discovered a new lode worth from 4 to 5 tons of ore per fm. This is independent of the old mine, and is likely to open out a new mine altogether.

Blaendyffryn Mine has been left idle for five or six years, but of late has been taken up by a London party, and good discoveries of silver-lead ore have been made both on surface and underground. Cefnewbrynno has also been taken up by a local party, and was lately sold to a gentleman from London, and by testing the lode on the soles of the bottom level they find it to yield 4 tons of silver-lead ore per fathom. At the Temple Mine a good run of ore ground is ready opened to stope; this is one of the finest lodes one can possibly see. The Aberystwith Mines are, bounding it on the west, looking well, and no doubt they will have several hundreds of tons of ore ready to stope away. At the old Ystumtean Mine, bounding the Aberystwith Mine to the west, during the last week or two they have made an important discovery in the western part of the mine. They have sent away about 400 tons of lead from this mine in a short period. Now, having made this great discovery, and having 50 fms. of backs to beat away, no doubt they will be able to increase their monthly returns of ore. Tyn-y-Fron Mine is joining the Ystumtean Mine on the west, where so fine a heap of lead, copper, and blende as anyone would see. The last four named mines are on the same lode, which is one of the most magnificent in this district. It is well filled with mineral for miles in length, but hitherto the workings have chiefly been confined above the adit level; nevertheless, an enormous quantity of ore has been sent away from even this shallow depth sufficiently to yield large profit. I believe one experienced in mining would advise deeper working on this lode, but there is time for everything; therefore, we may yet hope that the time, if not arrived, is rapidly approaching when shallow workings

shall be relinquished; and being encouraged by what our forefathers have found in shallow workings, we should resort to greater depths, where large deposits of mineral wealth may naturally be expected to be met with. It only wants enterprise and capital to force the lodes to yield up the hidden treasures which Providence has stored up for the benefit of mankind. The late discovery at Esgair Mwyn holds out well; no doubt they have now solved a problem which puzzled every party who have worked this mine for several generations past, by finding a continuation of the great bunch of ore worked away above the adit level, which seems to have been dipping very much westward. There are many other mines now idle of equal merits to any of those mentioned above, and no doubt will be put to work with a good prospect of success. A. WILLIAMS, Goginan, Feb. 13.

LOSSIEMOUTH LEAD MINE.

SIR,—In answer to the enquiries made in last week's Journal, by your correspondents, "C. A. M." and "Beta," under the head of "Lead Mining in the North of Scotland," I am able to send you the following information. A new lease of this property has been secured from the proprietors for a term of 21 years, the royalty to be paid being 1-16th, and a nominal dead rent of 1½ per annum. It is intended, I believe, to bring out a company to purchase the lease, &c., and to provide the necessary capital, and full particulars, including copies of the reports made by the several engineers who have inspected the property will be, I have reason to believe, published in next week's *Mining Journal*, and the office stated where samples of the ore may also be seen. From these reports it appears that the special feature of this mine is that the lode is productive at surface, and it is estimated that 150 tons of ore per month can at once be produced. There is no doubt that at one time the sea has washed right across the lode, and in receding has covered it with a few feet of sand and boulders, so that by removing this cover 77 fms. of ground can be worked open with a height of about 5 fms. Also there is here a junction of two lodes which, as every miner knows, is the place to look for rich deposits, and, therefore, no one will be surprised to hear that the outcrop at this junction is very rich. It has been measured, and is said to contain 15 ft. in width of first-class ore. Now, too such powerful lodes, one measuring 60 to 100 ft. in width, and being nearly perpendicular, are sure to go down to a great depth, and the ore may be expected to improve and consolidate. The lode has been improved at surface by costeaning for about 300 fms., and it is estimated that this portion will yield good returns on the capital required for machinery and development; therefore, when the main body of ore is laid open, which, as the shaft is already down 7 fms., will soon be done, exceedingly good results may be anticipated; in fact, if the deposit at the junction of the two lodes bears out the expectations which have (I think with reason) been formed of it, this mine will be heard of as one of the greatest successes of the day. British lead mines bear probably less risk than any other mining, while at the same time they bring some of the greatest prizes, and everyone will be glad to hear of another thoroughly good mine being added to the list.

C. E.

HINGSTON DOWN CONSOLS.

SIR,—The attempt to justify the treatment Capt. Richards has experienced during his illness on the ground of economy cannot for a moment be sustained, as the following facts will clearly prove:—At the last meeting of the company the directors in their official report expressed the fullest confidence in the management of the mine, and after sympathising with Capt. Richards in his illness, they emphatically assured the shareholders that they had "very confidence that the property was well looked after." Immediately after the meeting a movement was set on foot to dismiss Capt. Richards (one of the largest shareholders in the mine), and notwithstanding a voluntary offer was made on his part to continue without any remuneration whatever the arrangement he had previously entered into, and which had been so fully approved of by the directors themselves, the management has been taken out of his hands; the mine is now without either manager or engineer, and the practical workings are arranged in the London office. These are facts that cannot be gainsaid; economy in this particular instance is, therefore, manifestly altogether outside the question. Other astute influences are at work, which it is more than likely will at no very distant period meet with a deserved and unquestionable detection.—Feb. 12.

OBSERVER.

HINGSTON DOWN CONSOLS.

SIR,—The direction of the affairs of this mine as it now stands presents, perhaps, one of the strangest anomalies in the history of mining. According to the Articles of Association the full board of directors should consist of five representatives of the company. At present there are only three, two of whom (who it is no injustice to them to say are utterly unacquainted with the commonest rudiments of mining) have, to the blank astonishment of every practical shareholder in the company, taken advantage of the incomplete state of the board, and have upset the whole of the arrangements of the original directors, and have taken the management of the mine completely into their own hands. The management of the practical development of the property hitherto conducted with experience and judgment is now entirely disarranged, and the remonstrances of the shareholders so far have proved of no avail. The present state of affairs, unless extra means are used to remedy the evil, must continue until the annual meeting in May, when the board of directors will be made complete. It is said, however, that the shareholders will scarcely submit to the present state of ridicule until then, and that arrangements are being made to call a meeting of the company together long before that time.

N. Feb. 13.

ACCOUNT-HOUSE EXPENSES.

SIR,—Amongst the many reformations in modern mine management may be included the economy introduced into the account-houses. Half a century ago the cost of keeping up the drinking and eating customs in many of the mines was a serious item in the monthly expenditure, which the adventurers either overlooked or connived at. I was informed that at the United Mines it amounted to about 100¢ per month, and some other mines just as much. Treasurers, Penstruthal, Poldice, and Fowey Consols, amongst others, were places of "good cheer." The "good old times," captains say, have passed away, perhaps for ever. I call them bad old times, because of the inebriety which was concomitant on the custom. I have known agents and clerks to have left the account-house in an incapable condition, some had to be led to their homes to be kept in perpendicular, or to be placed in a cart on straw like dead pigs, and thus sent home to bed to be restored to consciousness by balmy sleep. A great deal of the expenses incurred were charged in some mines under the head of tutwork to hide from the adventurers the extent of the cost in the item of account-house expenses. In such mines as Treasurers and Penstruthal the extravagance at the date referred to would not be felt, because the mines were very rich, but at the others calls had to be made to sustain the workings.

Of late a necessary reform has been introduced, much to the credit of the managers. At Tincroft and Carn Brea there are no account-dinners, and I understand very little other expenses in the grog line. The manager has such a large interest in the mines that he would be largely affected by a heavy outlay; but, independently of that interest, he has adopted economy in the interest of his co-adventurers. This has been done in every department of the workings in Capt. Teague's mines. The same system has been also adopted in all the mines with which I am acquainted, and very properly so, because especially of the very remunerative prices of the ores produced. Notwithstanding the rigid economy now practised few, comparatively, of the mines in Cornwall give any profit to the shareholders, who, however, hold on in hopes of better times. Whether, or when, such times will arrive is a subject for speculation. I used to hear old people say "It must be a long lane that has no turning." We have been travelling so far in the lane of adversity that I long for a turn in another direction to take place. If the curse of war should soon terminate, there will probably be a change for the better

soon accrue, and stimulate mining as in former periods, and so supply employment for the numerous unemployed mines in our Cornish districts.—*Truro, Feb. 14.*

R. SYMONS.

P.S.—In the mines under the management of Mr. R. H. Williams, C. and M.E., there are no pay-day dinners, as in most mines. I remember that at the mines lately under the direction of Capt. R. Pryor the allowance for each mine was a guinea, or guinea and half, per month for agents dinners, &c., on pay-days, but at New Consols it could not be limited to that sum, because one of the directors was commonly resident on the mine.

PROMOTION MONEY.

SIR,—I do not see any impropriety in a promoter's charging a price for any mine of good promise. But the price should be a reasonable one—not exorbitant, as in some cases which I have known. About five years ago some London mine and stock brokers brought out five lead mines in Wales, the united capital for purchase and working being about 190,000¢. Out of that amount the promoters pocketed about 170,000¢, leaving the balance for working. Of course there was little done, and the recipients of the 170,000¢ did not care for working. In New Consols, if I have been correctly informed, the promotion moneys paid from time to time have amounted to about 20,000¢. At Phoenix Lead Mine, Perranzabuloe, 10,000¢; New Towan, 10,000¢, &c.—unreasonable charges, because the discoveries did not warrant such high prices. "Let reason rule" in all mining transactions.

OBSERVER.

Feb. 14.

DALE MINE, WARSLOW.

SIR,—Will you kindly permit the insertion of this letter, which I write with a view to obtaining information respecting a water-wheel which was erected some years ago, either at the Dale or some other adjoining mine? The wheel after working a short time was taken down and deposited on the premises of Sir John Crewe's agent at Warslow. It is 18 ft. diameter and 5 ft. on the breast. It has cast-iron shrouds, flanges, and arms, and wrought-iron shaft, and has a 17-ft. segment with 3-ft. spur nut, wooden buckets and rises, and wooden sole plank. It has been purchased by the Buxton Local Board, and in case of a possible accident to segments, &c., it would be well to know where the wheel was built. I have been unable, so far, to obtain this information, but I feel sure that a letter in your widely-circulated Journal will give me the best chance of succeeding in my object.

EDWARD S. DARWIN.

Buxton, Derbyshire.

WEST GODOLPHIN MINE.

SIR,—By carefully reading the reports, and by those who are favoured to hear the often expressed opinion of some of the most practical mining gentlemen in the district, I am pleased to know there is a belief that the important epoch is now about to be realised, and that this will be one of the principal prizes in West Cornwall this year, and likely to continue a series of years; but such determined and steady perseverance thoroughly carried out, as in this case, in one of the greatest tin mining fields yet known, is fully believed to come off successful. From long practical acquaintance with the mines in the locality, and knowing the geological formations are precisely similar to where the rich lodes were found in the neighbouring mines—granite and clay-slate, with elvan courses intersecting the lodes—there are the constituents here for producing enormous bodies of tin, as was found in the adjoining mines—Great Work and Wheel Vor; and if it proves as rich as the latter, when at its zenith producing 200 tons of black tin per month, and a cubic fathom of the lode worth 1000¢, and continue rich for 300 fathoms deep or more, they will only realise what has by some persons been considered they deserve, and is in store for them.

MINER.

[For remainder of Original Correspondence, see to-day's Journal.]

"THE INTERESTS OF BRITISH CAPITALISTS AND INVESTORS, AND THE POLICY TO BE PURSUED."

BY J. BURALL REYNOLDS.

A pamphlet bearing the above title has been issued by a practised and well known hand on mining matters. The author insists upon the desirableness and even the necessity of the British capitalist being on his guard against foreign Government loans, foreign mining schemes, waterworks, gas companies, &c., which have proved sources of heavy loss to Englishmen having money to invest. While there is such a general cry about "British Interests" of a political nature, Mr. Reynolds thinks attention should be paid to those interests by which the sinews of war are provided and the comforts of peace secured. He recommends, however, colonial securities and British mines as safe and profitable. Mr. Reynolds reminds investors that consumers have been buying from hand to mouth, and that stocks are small, especially in metals, all over both hemispheres, if we except Chile for copper and Holland for Banca tin. The war has consumed the stocks of metals for military purposes which Russia, Turkey, and Egypt had treasured up, and very nearly drained the Austro-Hungarian and German empires, and copper especially from the United States; these reserves must be reconstituted, and England must have a large hand in the work.

It must not be forgotten that this state of affairs is found with February half over, the spring budding forth, the most prosperous season for British trade, therefore, at hand, and the ice of the Baltic and Newfoundland breaking up. The author of this brochure thinks, and it appears to us properly, that capitalists ought to set their money freely but, of course, wisely forth. If they have not already experienced competent and honest agents, brokers, dealers, &c., they should seek such. A man of probity and ability, whose profession it is to study investments, will always be able with a very short notice to advise the investor whether he should hold himself in reserve or not; and if the latter, in what direction capital should be laid out. We have known instances of men and even women too "self opinionated" to take professional advice to rush into the maddest schemes in which insane persons could be entangled. We have known persons to adventure their money in excellent stock, and without consulting their professional adviser sell out on the representations of somebody else, and purchase shares with sanguine expectations in some other stock, the merits or demerits of which they could not understand, and ultimately their money was *non est inventus*. This is just a crisis when the capitalist should unite caution and courage; let him use his own judgment, taking care to enlighten it with the most experienced counsel he can obtain.

Mr. Reynolds avers that it ought to be the policy of those who require employment for their money to buy in a rising market, and if they chose to part with their stock at all sell in a dear one. Unhappily the herd of moneyed people wait until shares are abnormally high, then buy, and when the shares sunk to a normal value sell out at a loss. Mr. Reynolds illustrates this by striking examples. A certain railway stock was reduced by a temporary panic 25 per cent. The holders of shares rushed as sellers to the market. The stock survived the apparent catastrophe, and the very same persons came back as buyers at the old price. Only a short time ago a mining company desired to make a new issue of stock at par amongst its own members, and there was a very general refusal to subscribe; shortly after the same shares were offered at a premium, and eagerly taken up, no change in the value of the property having in the meantime taken place.

The author of the pamphlet maintains that there never was a better time to invest than the present, especially in mining properties, which if properly and judiciously selected pay better than any other, very generally offering a range of from 10 to 50 per cent., but he has known 100, 200, and 300 per cent. taken in dividends upon a prosperous mine. The peculiarities of the present time are, in his opinion, these—the prices of stocks of all kinds are low, because of the protracted depression, but the market is on the rise, and, for all the reasons he has given, destined to rise rapidly. Of course, if investors defer their operations, knowing speculators will secure these properties at low prices, and sell them to those whose foolish habit it is to purchase only when prices are up. It is especially bad policy to part with shares of low quotations either in dividend paying or prospective and progressive mines. If recommended by your confidential adviser hold on, and wait the flowing tide which bears to fortune.

Our author truly maintains that there never was a period in which such numerous opportunities existed for investment in mines of an accredited character, in rich geological districts, with all the requisite topographical requirements. He strongly recommends this description of property to his clients; and can point out metaliferous estates which offer good security, and will make quick returns; the same may be said of English railroads. It is rumoured that France and Russia are both likely to augment greatly their railway systems. In the former country the security would be good, but in the latter dubious for some time to come. Mr. Reynolds boldly asserts that the most feasible investments of the day are British mines, which are "British Interests" in every way, satisfying the investors, employing the people, sustaining railways and shipping, and largely enhancing the resources of the State. He announces a carefully selected classification of investments of this character, to which he invites the attention of his clients and the public.

EPPE'S COCOA—GRATEFUL AND COMFORTING.—"By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected cocoa, Mr. Eppe has provided our breakfast tables with a delicately flavoured beverage which may save us many heavy doctors' bills. It is by the judicious use of such articles of diet that a constitution may be gradually built up until strong enough to resist every tendency to disease. Hundreds of subtle maladies are floating around us ready to attack wherever there is a weak point. We may escape many a fatal shaft by keeping ourselves well fortified with pure blood and a properly nourished frame."—*Civil Service Gazette*. Sold only in packets labelled "JAMES EPPE and Co., Homeopathic Chemists, London."

Meetings of Public Companies.

MWYNDY IRON ORE COMPANY.

The annual general meeting of shareholders was held at the company's offices, Queen-street-place, on Wednesday, Mr. ALEXANDER BROGDEN, M.P., in the chair.

Mr. A. THOMSON (the secretary) read the notice convening the meeting, and the report and accounts having been previously circulated were taken as read.

The accounts for the year ending Dec. 31 show that the net profits of the year amount to £784. 13s. 7d., to which has to be added the balance brought forward from the previous year, £751. 0s. 2d. = £1535. 13s. 9d.; deduct interim dividend of 1s. 6d. per share, paid on July 16 last, 3000l.; leaving, 5609l. 13s. 9d. The raisings of ore in the first ten months of the year were satisfactory, the total quantity being 53,935 tons, compared with 50,523 tons in the corresponding period of the previous year, or an increase of 3412 tons. Owing to the extremely wet weather in the months of November and December, and an increase of water from the opening out of the Llywysar ore ground, the engine power was unable to keep the lower parts of the mine free from water, and in consequence the raisings of ore fell off very considerably, the total raisings for November and December being 5943 tons, as compared with 10,985 tons in the corresponding months of last year. The total ore raised in the whole year was 59,878 tons, as compared with 61,708 tons in the previous year, or a decrease of 1830 tons. As regards the Llywysar property, immediately adjoining the eastern workings, the opening out of the mine during the year proved that a very considerable body of ore exists, and a shaft has been sunk and a winding-engine erected for the purpose of raising the ore in the most advantageous manner. In the total quantity of ore raised in the past year as above there is included 10,794 tons raised from the Llywysar property.

Trecastle Property: The managing directors' report of last year stated that a new engine-house and engine were nearly completed. This engine was got to work in the month of March and very speedily drained the mine, the opening out of which was vigorously proceeded with, but as the workings were extended the water increased and soon became more than the engine could master. As the progress made had in all respects confirmed the anticipations which the directors had formed of the mine, they ordered a new pumping-engine, which is now erected and the boilers set in their places, and when certain parts of the pitwork are completed the pumping-engine will be started. The total expenditure on this property during the past year has amounted to £7294. 5s. 9d., as shown by the accounts, which the directors propose should be added to the capital account. The shareholders will notice a reference to this property in the report of the managing directors. The directors regret to inform the shareholders that their oldest and largest customer, the Llywyl, Tondy, and Omore Coal and Iron Company (Limited), have found it necessary to pass resolutions for a voluntary liquidation last month. The amount owing to this company by them is £7290. 9s. Their acceptances for this sum having been discounted, must be taken up by this company at maturity. The purchases by the Llywyl Company during the last five years have amounted to the sum of £130,224. 6s. 11d., and although the amount now due to this company is large, it is less than it has been at any time during the last five years. The directors in view of the loss up of their finances from this event, and being unable at the moment to anticipate the result, propose to carry forward the undivided profits of 5609l. 13s. 9d. This course is rendered all the more advisable because of the accumulated stock of ore on hand. The expenditure at Trecastle and the balance of the purchase of the lease at Llywysar, amounting together to £11,829. 5s. 9d., the items of which appear in the accounts, must also be provided for, and the directors have accordingly made a call of 5s. per share payable on March 1. In the valuable additions to the ore grounds which the company have acquired in Llywysar and Trecastle the directors see good grounds for hoping the company may do as well in the future as it has done on the average in the past, regard being had to the contingencies which necessarily attend all mining undertakings.

The CHAIRMAN said that he had to make a few comments on the report before moving its adoption. The directors were, as no doubt the shareholders were also, disappointed in the fact of not having a more favourable report, and that the directors did not feel justified in declaring the usual dividend, but they had stated the reason in the report. The year had been a particular trying one for all branches of industry, and especially for the iron trade; and he was sorry to say that one of the company's largest customers had been compelled to go into liquidation. He was happy to be able to tell them, and he was well acquainted with the exact position of the liquidating concern, that there was not likely to be any ultimate loss, although, of course, the money was temporarily locked up. During the year they had not lost money otherwise, but had earned the debenture interest. They had, he was pleased to inform them, a considerable quantity of ore in stock—in fact, the stock had not been so large as for some time. This all represented good money, but was not available for dividend until the amount was actually realised, and although they were selling much at present, they were still accumulating stock. But he need hardly tell those connected with mining that when a mine was open operations had to be carried on or the ground might have to be re-opened, and greater expense incurred than in keeping the mine going. The expenditure on capital account, which for some time since had been going on, but this year had been so great that they did not feel justified in dealing with it as usual. During the past year there had been expended on the Trecastle property 7294. 5s. 9d. for pumping and winding engine, engine-house, pitwork, branch railway, and so on. As to the Trecastle property, the shareholders were aware they had been searching for ore and opening up the property. In doing this they had expended 16,000l., but of that amount 8000l. had been charged to revenue and paid, and it would only cost about 11,000l. more to complete the operations. But even if they spent 20,000l. more they would even then have for 10,000l. a property of 350 acres in extent, and in which they had proved to exist splendid quantities of ore—14 ft. thick in one place, 12 ft. in another, and 9 ft. in another—and all this had been acquired at a capital cost of only 8000l. or 10,000l. The ore is driven into, and the water proved heavy, which, however, was not an unsatisfactory feature, as, especially in metalliferous mines, it proved they had open ground, and gave promise of a permanent mine. He believed scarcely any of the shareholders realised what would be the value of the Trecastle property. They had also charged 4000l. to capital account in respect of Llywysar; this they purchased for 6000l., of which 2000l. had been paid out of revenue. They had already drawn 10,000 tons of ore out of it, and he believed they had made a good bargain. They had to make a call to pay these charges to capital account, and much regretted that they had to do so, but so great was the indisposition at the present time to lend money on debentures such as the company could offer that they had no alternative but to make a call; he trusted, however, that they would soon sell the ore in stock, and thus improve their position. To declare no dividend and make a call was, he admitted, an awkward combination of circumstances, but they would see from the report that they had ample value for the call. They had to carry forward 5600l. undivided, and if they could turn this into an available form it could be applied for dividend at a future day. The directors' confidence in the property was undiminished, for it never looked so healthy and well as at present, so the property had not gone to the bad, and when they considered that all the industries of the country, and especially the metalliferous trades, were in such a depressed condition, and the company had been able to make a profit of 7800l. during the year, he must say it did show there was vitality in the property, and should encourage the shareholders to go on through the period of depression. He concluded by formally moving the reception and adoption of the report and accounts.

Mr. TAYLOR, in seconding the resolution, said that the Chairman had explained the financial difficulties of the company and the way they proposed to meet them. As to the property, they never had greater confidence in it. The Mwyndy property proper was freehold, and had a large amount of plant on it, and they had actually taken more than 1,000,000 tons out of it, which, of course, had diminished it, but there was still a large amount there. At Llywysar they had three levels all coming in in good ore; they had also taken out and sold 10,000 tons of ore, and they had in front of them a rushy moor, and under these they generally got good deposits. They had a very high estimate of what would be found there. Trecastle, which had been referred to as a property on which they had expended 8000l., is three miles from Mwyndy proper, near the Llantrisant station, and on the Cowbridge line. They had a gravel quarry here which they had turned to good account for making concrete, and had erected a powerful engine there. They were attaching 24-in. pumps, which they would understand were very large ones. The ore had assayed 61 per cent. of metallic iron, the result of two analyses by Mr. John Pattinson, of Newcastle, being—Sample No. 1: Peroxide of iron, 87.43 per cent.; protoxide of manganese, 0.24 per cent.; alumina, 0.24 per cent.; lime, 0.28 per cent.; magnesia, 0.27 per cent.; oxide of copper, trace; carbonic acid, nil; silica, 1.97 per cent.; sulphur, 0.02 per cent.; phosphoric acid, 0.01 per cent.; combined water, 9.29 per cent.; moisture, 0.21 per cent.=99.96 per cent., or 61.20 per cent. metallic iron. Sample No. 2: Peroxide of iron, 74.71 per

cent.; protoxide of manganese, 0.19 per cent.; alumina, 1.90 per cent.; lime, 5.56 per cent.; magnesia, 0.94 per cent.; oxide of copper, trace; carbonic acid, 4.90 per cent.; silica, 3.86 per cent.; sulphur, 0.02 per cent.; phosphoric acid, 0.01 per cent.; combined water, 7.64 per cent.; moisture, 0.24 per cent.=99.97 per cent., or 52.30 per cent. metallic iron. They had now scarcely anything more to do to get the mine into full working order. They availed themselves of the services of the Diamond Rock Boring Company, by whom eleven holes were put down, and in nine of these ore was found, and in one it was very rich. In six months they would have active operations going on, and all is ready to begin business. During the ten years they had been at work they had made 118,000l. profit, of which 85,000l. had been paid as dividends, and the remainder expended as capital. They had good customers for their ore until the late mishap to one of them, and would no doubt have them again, and a better set of workmen than theirs could not be found.

The report and accounts were then unanimously adopted, Captain Pelly and Mr. Fletcher were re-elected directors, and Mr. Scott was re-appointed auditor, the proceedings terminating with the usual complimentary vote.

LAST CHANCE SILVER MINING COMPANY OF UTAH.

The annual general meeting of shareholders was held at the Cannon-street Hotel, on Wednesday, Mr. ADLEY in the chair.

Mr. J. BUTLER WILLISON (the secretary) read the notice calling the meeting.

The CHAIRMAN said: Gentlemen, this is a formal meeting, necessary to comply with the regulations of the company. There are no accounts to present, for practically those of the mine have been consolidated in arrangement with Mr. Davis, by which 10,000l. was knocked off his claim, and a lump sum of 31,938l. agreed upon to be paid out of profits, by dividing the same equally between the company and Mr. Davis until liquidated. The funds now in course of being raised will be accounted for at the close of the current financial year, when a complete statement of your financial position can be at the same time rendered. Since our meeting in October last we have made material progress, and our position has substantially improved. At that period judgments amounting to 2000l. were impending, and had to be met by fixed dates, or your property would have been sacrificed. We had then no funds in hand to meet these and other prospective demands, and an appeal was made to the shareholders, which has been well responded to. Since then we have paid off a portion of the above sum, the rest we have not found it necessary to pay, and are justified in stating that we shall be entirely relieved from its payment. Besides the above 2000l. there were other disputed claims, amounting to about 5000l. made against us. These claims have been defeated, and we have no further fears regarding them. At the same time we are free to proceed to substantiate and recover our counter claims for various amounts, and we reserve our rights so to do. As concerns the furnaces, when we last met they were partially under a cloud. Our title to them was disputed by more than one litigant. We have now the pleasure to state that a cablegram has been received from our attorneys in Salt Lake City, informing us of their taking possession, and implying that our title had been established and our opponents defeated. The furnaces are worth about 5000l., and from their central and convenient situation can be readily leased for about 1200l. a-year. There are besides, attached to the furnaces, over 100 acres of valuable and improving land adjoining the Sandy station, near the point of junction of three railway lines. Altogether your position is now highly favourable. You are free from adverse litigation, all of which is practically at an end, and there need be no further fear on that score. At the same time we are at liberty to proceed to recover claims and damages against offenders, for which we have a very strong case. Our relations with Mr. Davis continue of the most friendly character, and we trust nothing will arise to disturb our harmony and unity of action, for our interests are mutual and identical. We have now only to complete the works necessary to bring your very valuable property into a good paying condition. The machinery, engines, pumps, &c., will be ready for shipment by the end of this month, and should nothing unforeseen occur we anticipate that by June next everything will be erected and in working order. By July all the operations in the mine ought to be in full swing, and turning out large quantities of rich ore. From what I know of your property I feel justified in expressing an opinion that we are approaching the threshold of a bright, if not a brilliant, future. To secure this happy consummation we still require about 2000l. between this and the end of May, in addition to what has already been provided. We trust the shareholders will join with us in raising this additional sum, especially as we can now offer the additional security of our furnaces. I may as well mention that Mr. Davis, in one of his recent letters, considers the terms we are offering are far too liberal, and that had he not already so much money in the concern he would take up all we require rather than we should pay such exorbitant rates. Mr. Davis is also of opinion that we shall probably be able to pay off the whole of the amount now raised by the end of the first year after getting into active work, and in this view I entirely concur. I may add that if any shareholders prefer to advance the company money upon their bills, repayable in one year, with 10 per cent. interest, in lieu of taking debentures, we are quite prepared to entertain such offers. (Cheers.)

Mr. HARRIS said the prospects of the mine were gratifying, and better than he had known them at any previous period. He asked whether they were now at work and raising ore.

The CHAIRMAN said there were a few men at work, but being winter the directors had not considered it desirable to put on more men. The ore which was being raised was being stacked on the dumps for summer. Were it not for winter they could go on more actively, but the directors thought it better to postpone operations until they had got the engines at work and the mine cleared of water at the lower levels, and turning out ore in large quantities, which was more profitable than maintaining an expensive staff for doing very little work.

A GENTLEMAN, who said he represented Mr. Sykes, asked that a letter might be read which Mr. Sykes addressed to the board on Feb. 11; but as it appeared that the letter had reference to purely legal matters the shareholders decided that the communication need not be read in public meeting.

A SHAREHOLDER asked what was being done with the ore which was being taken out?—The CHAIRMAN said he had found it perfectly impossible to get any information with respect to the quantity of ore taken out, but there were 4000 tons handed over to the sister company, and that quantity was taken out of the upper levels only. That ore was very rich ore, but he had found it impossible to get at the actual amount, as the railway declined to give any information. Within a fortnight of his arrival there ore had been sold which properly and practically belonged to this company. But he could not get the details of that transaction, as the railway would not give him the information regarding the ore sent away; but there had been over 4000 tons taken away, worth £280,000, or 56,000l.

The CHAIRMAN said, in answer to a question, the directors proposed to raise the money required by bills, considering that was the best mode, as the directors hoped to pay them off in a year from the mine getting in full working order. Mr. WILLIAMSON said he should be glad to subscribe his full proportion of the money required, and hoped the other shareholders would do the same, whereupon subscriptions were made in the room to the extent of 1000l.

Dr. SIMMS said he had the very greatest pleasure in proposing a cordial vote of thanks to the Chairman for his services to the company, who had dragged the company out of the slough into which it had fallen. He also referred to the great services which had been rendered by the directors and the secretary.

A SHAREHOLDER seconded the resolution, and expressed a hope that the Chairman would soon go again to America to finally settle the affairs of the company. The resolution was put and carried.

The CHAIRMAN acknowledged the compliment, and said as soon as he could complete arrangements he intended starting for Salt Lake.—The meeting then broke up.

PARYS MOUNTAIN MINING COMPANY.

The general meeting of shareholders was held at the company's offices, St. Helen's-place, Bishopgate-street, on Thursday,

Mr. J. Y. WATSON in the chair.

Mr. F. R. WILSON (the secretary) read the notice convening the meeting, and the subjoined report of the directors was submitted:—So many intermediate meetings of the shareholders, at which the accounts of the company were fully discussed, have been held since the last general meeting that the directors have very little new matter to communicate. The contract with Morfa Du has been carried out so far, and the accounts which have been circulated show a balance of assets over liabilities of 4210l. 9s. 2d., after charging 500l. for the costs to the end of January. The cross-cut at the 90 south has intersected a branch, and a few fathoms driven upon it has discovered a lode worth 1 ton of copper ore per fathom. The main object of the cross-cut, however, has not been reached. Several points in the mine very productive for copper have been suspended, owing to its low price, but should the price of copper advance 1l. per ton the agent considers they could be put to work again to a good profit. Mr. Davies resigns by rotation from the board, and offers himself for re-election.

The CHAIRMAN remarked that there was one thing not mentioned in the report to which he must refer. For some time past experi-

ments had been going on for treating their poor ores and halvas, of which they had hundreds of thousands of tons. So far the results appeared satisfactory, and the chemist by whom they were undertaken had now offered to test at his own cost 50 tons of the stuff if the company would place it at his disposal and give him a contract that if he succeeded they would pay him a royalty on all ore treated by the process.

Mr. BUSH expressed surprise that the captain was not present at the meeting, and expressed the opinion that many mines capable of profitable development were worked at a loss owing to want of more active supervision on the part of the directors, one or other of whom he thought should visit the mines which they had control over once at least in every two months. He proposed that they should have a little fresh blood on the Parys Mountain board; they had but three directors, and he suggested that they should have six, so that one visit to the mine a year would secure the two monthly visits proposed. He also thought the remuneration should be 400l. per year each until 4 per cent. on the capital should be paid as dividend, and 500l. afterwards, the directors paying their travelling expenses to the mine out of the fees named.

Mr. COOPER would be happy to second the proposition; he should be sorry to throw in the apple of discord, but he had long been connected with the company, and not the slightest progress had been made. He thought it desirable to add at least two new directors to the board.

The CHAIRMAN said the directors would be only too happy to have the board strengthened, but by the Articles the number of directors must be not less than three nor more than five, so that only two could be added, and the remuneration was fixed at 250l. per annum, whether three or five were in office.

The report and accounts were then unanimously adopted, Mr. Bush was, upon the proposition of Mr. BELLINGHAM, seconded by Mr. COOPER, appointed a director; and upon the proposition of Mr. BRADY, seconded by Mr. LUCAS, Mr. Davies was re-elected. Upon the proposition of Mr. CHAPMAN, seconded by Mr. BELLINGHAM, the auditor (Mr. Dick) was re-appointed at 100l. per year remuneration, as before.—The usual vote of thanks to the Chairman terminated the proceedings.

MORFA-DU MINING COMPANY.

A general meeting of shareholders was held at the company's offices, St. Helen's-place, Bishopgate-street, on Thursday,

Mr. J. Y. WATSON in the chair.

Mr. F. F. WILSON (the secretary) read the notice convening the meeting, and the report of the agent was read.

The CHAIRMAN said that this was merely a formal meeting. The sinking was going on as fast as possible, and they believed that when they reached the bluestone they would have a good market for it.

Mr. F. R. WILSON, in reply to an enquiry, stated that they had sunk 4 fms., but one month was spent in getting the engine to work and clearing out the shaft.

Mr. COOPER enquired whether Capt. Mitchell could give no data as to when he would raise bluestone?

The CHAIRMAN said that the matter was fully explained in the prospectus. The 700l. was required to sink 10 fms., and it was estimated that they would then be able to get 150 tons per month. It was stated that seven or eight months would be required, and of this three were now gone.

Mr. BUSH was given to understand that when the mine ceased work it was paying well. Mr. F. BRADY said that it was a good way towards paying cost. Up to the time they stopped they were getting bluestone out, but they exhausted all that could be got in the same level, and the additional money was required for sinking the shaft deeper, hence the formation of the company. The workings were valuable both for bluestone and copper.—Mr. BUSH supposed there would be a demand for the bluestone when it was obtained.

The CHAIRMAN said that parties had offered to purchase all the bluestone they raised, but they hoped to do still better with it, as experiments were being made to ascertain whether they could not use the residue of the bluestone instead of scrap iron for the precipitation of copper.

Mr. F. R. WILSON said that they had sold some of the bluestone at 20s. per ton, and some at 30s. per ton.

Mr. BRADY remarked that the bluestone was worth 6l. per ton, including the gold and silver, but unfortunately it could not be got out without destroying some of the others. The presence of arsenic, sulphur, zinc, and other ingredients made it exceedingly difficult to treat, though it really contained nearly twice as much gold as the Port Phillip ore, but it was not so accessible, nor obtainable in such large quantities, as the Port Phillip ore, and consequently for gold alone it could not be treated at a profit. Their ore also contained several ounces of silver to the ton.

It was stated in reply to an enquiry that the directors did not go out of office until the second ordinary meeting, and that afterwards they went out one each year by rotation. The usual complimentary vote of thanks terminated the proceedings.

[For remainder of Meetings, see to-day's Journal.]

THE SCOTCH MINING SHARE MARKET—WEEKLY REPORT AND LIST OF PRICES.

During the past week business has been quiet again. The usual fortnightly settlement intervened, and particulars of the small continuation business then done are given below. The inactivity is owing to the depression of trade, the slightest hope of improvement in which for the present seems forbidden by the extreme gravity of the political situation. Unmistakable evidence of this is afforded by the Board of Trade Returns for January, which show that the improvement in commerce which undoubtedly set in towards the close of 1877 has received a complete check, which we can only account for by the uncertain state of politics.

In shares of iron and coal concerns, Boleckow, Vaughan, A. have advanced 20s. per share and Ebbw Vale 2s. 6d., while Omoa and Cleland are reduced 5s. Lochore and Caplehead are steady at 75s. to 80s. The sales of Scottish Australian for the month of November were 17,174 tons. Sheepbridge are higher at 17s. having struck a new field of coal of the extent of 2000 acres, at a depth of 538 yards. The seam is 5 ft. 10 in. thick, of which 3 ft. 7 in. is hard. The whole sinking took one year and 193 days. A second shaft has been reached the depth of 635 yards. Chapel House 7 1/2 per cent. debentures and United Bituminous both offered. Boleckow, Vaughan, A. are at 55 to 58; ditto B. 35 to 38. Cairnstable, 8 1/2. Ebbw Vale, 7 to 9. Llywyl, Tondy, and Omore, 5 1/2. Mersey, 8 1/2. Nant-y-Glo and Blaina (pref.), 13 to 18. Sheepbridge (new), 8. Thorp's Gawber, 50s. to 70s. West Mostyn 12 per cent. (pref.), 20s. to 30s. West Cumberland, 7 1/2.

In shares of foreign copper concerns, Cape are reduced 10s., Tharsis 5s., and ditto (new) 1s. 3d. The price of Tharsis is well maintained considering the small amount of business doing. Yorke Peninsula are firm, but there is nothing worthy of particular notice in the report received this week from the mine. Five men working the back of the 45 west (Kurilla lode) raised about 70 tons of 20 per cent. ore in October and November, besides about 10 tons of 9 per cent. ore. The ore returns are 110 tons of 20 per cent. shipped, and ore of the estimated value of 2356l. on hand. Kapunda are at 1s. 3d. New Quebrada, 4 1/2. Pandulic 25s. to 35s. Rio Tinto 5 per cent., 58 1/2. Yorke Peninsula, 3s. 9d. to 6s. 3d.; and ditto (pref.), 17s. 6d.

In shares of home mines both classes of Glasgow Caradon are 1s. lower per share. Killfrish shares continue dull, and it is stated that a larger engine will be required for the water at West Fouldie, or it will be impossible to go on. Lead shares are steady. Cargill rather offered, but Rhyl Allyn and South Molton Consols are in some demand. Roman Gravel are still considered a good investment. Bampfylde are at 4s. Bryn Allyn, 8s. Cambrian, 35s. to 45s. Caron 45s. Combarnet, 4s. Dolcoath, 30 to 31. East Van, 45s. Great Laxey, 21. Leadhills, 80s. Medlyn Moor, 12s. 6d. Parys Mountain, 9s. Rhosomer, 20s. South Condurrow, 9 to 9 1/2. Tincroft, 11 to 12. West Wye Valley, 80s.

Shares of gold and silver mines have been more dealt in. Richmonds have fallen 10s.; the week's run being 30,000. Port Phillip reports a profit of 933l. on the month ending Jan. 30. Chautauque, in December, only made some 8l., but in the same month, making a profit of 433l., though rain appears to have since cleared. A partial clean-up at the Blue Tent property, on Yuba claim, has given 8400l. It is difficult to understand why the summonses issued some time since, at the instance of the Emma Silver Mining Company (Limited), against the vendors and others to set aside the original sale, and for recovery of the purchase-money of 1,000,000l., &c., have been brought so prominently before the public again during the past week. The simultaneous announcement of a satisfactory result attending the working of the mine itself by some Americans for the latter part of 1877 encourages a belief that something new in the history of this unfortunate affair may be forthcoming; but there is nothing plainer, it does not matter what reports are issued, than that the mine could never be, or likely to be, worth anything like what was paid for it, or the defendants would not so strenuously resist to cancel the original purchase of the property, consequently the shareholders are entitled to restitution, and it is to be desired they will get some measure of justice. Australasian mines offered. Antioquia are at 12s., and a small lot were done at 10s. Conchales, 12s. 6d.; Chicago, 30s.; Don Pedro, 11s.; Eberhardt, 6 1/2; Flagstaff, 15s.; Javali, 7s. 6d. to 10s.; Frontino, 40s.; Last Chance, 12s. 6d.; Festarena United, 5s. 6d.; ditto 12 1/2 per cent. (pref.), 12s. 6d. to 17s. 6d.; Port Phillip, 11s. 3d. ex div.; Santa Barbara, 28s. to 27s.; South Aurora, 3s. to 5s.; St. John del Rey, 32s.; Tecoma, 2s. 6d. to 5s.

Oil companies shares are firm. Dalmeny and Young's Paraffin, both easier. The best shares for investment are considered to be those of Oakbank and Young's Paraffin, which both yield about 8 1/2 per cent., taking the average dividend paid for the past two years, but as the Oakbank has only been established during the last three or four years, perhaps the other is the safest. Though the price of oil is very low at present, practically below what most companies can make any profit on, still the residuary products remain, which are the source of great profit when properly utilised. Price's Candle are at 11 1/2; Runcorn Soap and Alkali have been sold at 5 1/2 d. In shares of miscellaneous companies there is very little movement, all prices being as a rule maintained. Phospho-Guano, Scottish Wagon, and ditto (new), are all dealt in ex div. Milner's Safe are better at 7 1/2 to 7 3/4; Phospho-Guano, 9; and Palmer, B. 15 1/2 d. Shares of Chemical Companies unaltered; Langdale's at 90s. 3d.; Lawes', 7l. 3s. 9d.; ditto 7 per cent. (pref.), 9 1/2 to 10 1/2; and Newcastle, 41s. 3d.

CHAPEL HOUSE COLLIERY COMPANY (Limited).—The completion of this company's second shaft is an event which is likely to direct the attention of investors to it, as the output is expected to be raised to 1000 tons per day, which if realising anything like the profits of 1s. 10d. or 2s. per ton held forth will make it very prosperous. The company was only established some four or five years since, but it is under no misapprehension as to the value of its output. The colliery is situated in the district of Silegh, about 14 miles from Liverpool, and there are eleven known seams, aggregating 37 ft. of good workable coal. There is also the necessary plant, of course, besides offices and everything required for carrying on a shipping trade. The ordinary share capital is 100,000l., and there are also

40,000l. worth of debentures, bearing interest at the rate of 7½ per cent., redeemable at par at the option of the directors in a fixed time. The certain value of these debentures is only necessary to decide the prices of collieries and leases in 1873 with their value now, and the amount of the 100,000l. worth of shares which may happen to be capital bona fide sunk in the concern, taken at this valuation, will give the real value of the security.

On Contango-day (Monday) the following were the rates of continuation current:—Contango: 1d. on Glasgow Caradon Consols; 1d. on Glasgow Port Washington; 1d. on Huntington; 2½d. on Marbella; 1d. on Monkland Iron; 1½d. on Oakbank; 3d., 2d., 3d. on Richmond; 9d. on South Condurrow; 1½d. on Uphall.—Backwardations: 1s., 9d., 6d., 6d. Tharsis, even; 3d. on Young's Paraffin. On comparing the making-up prices of the undermentioned shares, fixed to-day, with those of the previous settlement the variations shown for the account are:—Richmond, Uphall, and Young's Paraffin are each 2s. 6d. per share higher; Monkland, 1s. 6d.; also Tharsis and ditto (new) each 1s. 3d., while Omoa and Cleland are 7s. 6d.; also Glasgow Caradon and Oakbank Oil each 6d.—all lower. The following show no change:—Canadian Copper, Glasgow Port Washington, Huntington, Marbella, Monkland Iron (preference), and South Condurrow.

Subjoined are this week's quotations, &c., of mining and metal shares quoted on the Scotch Stock Exchanges:—

Per share.	Paid up.	Rate per cent.	Description of shares.	Last price.
£ 10	.. 28	.. 6 ½	.. £ 7½. Arncliffe Coal (Limited)	7½
10	.. 10	.. 6	.. 4 .. Benhar Coal (Limited)	6½
10	.. 10	.. 6	.. 4 .. Ditto	6½
100	.. 50	.. 41 6d	.. 22 6d .. Bolekow, Vaughan, and Co. (Lim.)	56½
10	.. 10	.. 10	.. 10 .. Cairntrable Gas Coal (Limited)	8½
10	.. 10	.. nil	.. 10 .. Chillington Iron (Limited)	70s.
32	.. 29	.. nil	.. 10 .. Ebbw Vale Steel, Iron, and Coal (Lim.)	8
10	.. 6	.. nil	.. 10 .. Fife Coal (Limited)	70s.
10	.. 10	.. nil	.. 10 .. Glasgow Port Washington Iron & Coal (L)	30s.
10	.. 10	.. nil	.. 10 .. Ditto	30s.
10	.. 10	.. nil	.. 10 .. Lochore and Caplethorpe (Limited)	80s.
10	.. 10	.. nil	.. 10 .. Marbella Iron Ore (Limited)	45s.
10	.. 10	.. nil	.. 10 .. Monkland Iron and Coal (Limited)	38s. 6d.
10	.. 10	.. 5	.. 4 .. Ditto Guaranteed Preference	70s.
100	.. 100	.. nil	.. 10 .. Nant-y-Glo & Blaith Ironworks pref. (L)	14½
6	.. 6	.. nil	.. 10 .. Omoa and Cleland Iron & Coal (L. & Red.)	10s.
1	.. 1	.. 15	.. 15 .. Scottish Australian Mining (Limited)	32s. 6d.
1	.. 1	.. 15	.. 15 .. Ditto New	10s.
Stock	.. 100	.. nil	.. 10 .. Shotts Iron	91
COPPER, SULPHUR, TIN.				
4	.. 4	.. 40	.. 50 .. Canadian Copper and Sulphur (Lim.)	4s.
1	.. 1	.. 15	.. 7½ .. Cape Copper (Limited)	32½
1	.. 15s.	.. 15	.. 7½ .. Glasgow Caradon Copper Mining (Lim.)	20s.
10	.. 9½	.. nil	.. 10 .. Ditto New	13s.
25s.	.. 23s.	.. nil	.. 10 .. Huntington Copper and Sulphur (Lim.)	30s.
4	.. 4	.. nil	.. 10 .. Kapunda Mining (Limited)	1s.
10	.. 10	.. 6½	.. 6½ .. Paniclello Copper (Limited)	30s.
20	.. 20	.. 7	.. 7 .. Rio Tinto (Limited)	70s.
100	.. 100	.. 5	.. 5 .. Ditto, 7 per cent. Mortgage Bonds	14½
10	.. 10	.. 22½	.. 20 .. Do. 5 p.c. Mor. Deb. (Sp. Con. Bds.)	56½
10	.. 7	.. 22½	.. 20 .. Tharsis Copper and Sulphur (Limited)	22
1	.. 1	.. nil	.. 10 .. Ditto New	14½
1	.. 1	.. nil	.. 10 .. Yorke Peninsula Mining (Limited)	6s. 3d.
1	.. 1	.. nil	.. 10 .. Ditto, 15 per cent. Guaranteed Pref.	17s. 6d.
GOLD, SILVER.				
1	.. 1	.. nil	.. 10 .. Australian Mines Investment (Limited)	8s.
5	.. 5	.. 7s. 6d	.. 7s. 6d .. Richmond Mining (Limited)	8½
OIL.				
10	.. 7	.. 6	.. 15 .. Dalmeny Oil (Limited)	8½
1	.. 1	.. 7½	.. 25 .. Oakbank Oil (Limited)	8s.
1	.. 5s.	.. nil	.. 25 .. Ditto	10s. 6d.
10	.. 10	.. 2½	.. 7½ .. Uphall Mineral Oil (Limited) "A"	6½
10	.. 10	.. nil	.. 10 .. Ditto "B" Deferred	10
10	.. 10	.. nil	.. 10 .. West Calder Oil (Limited)	72s. 6d.
10	.. 8½	.. 9	.. 17½ .. Young's Paraffin Light & Mineral Oil (L)	13½
MISCELLANEOUS.				
50	.. 25	.. 5	.. 6 .. London and Glasgow Engineering & Iron Shipbuilding (Limited)	25½
7	.. 7	.. 10	.. 15 .. Peruvian Nitrate (Limited)	10
10	.. 10	.. 6	.. 6 .. Phospho Guano (Limited)	9½
10	.. 10	.. 6	.. 6 .. Scottish Wagon (Limited)	11/3s. 9d.
10	.. 4	.. 6	.. 6 .. Ditto New	87s. 6d.

† Interim. ‡ Per share.

Last day for this account, Feb. 25; settling day, Feb. 28.

NOTE.—The above lists of mines and auxiliary associations are as full as can be ascertained, Scotch companies only being inserted, or those in which Scotch is in the majority. In the event of any being omitted, and parties desiring a quotation for them and such information as can be ascertained from time to time to be inserted in these lists, they will be good enough to communicate the name of the company, with any other particulars as full as possible.

J. GRANT MACLEAN, Stock and Share Broker.

Post Office Buildings, Stirling, Feb. 14.

THE ALMADA AND TIRITO MINES.

TIRITO.—Capt. Wm. Clemon, Dec. 13: The branch working in the first lode, south of the engine-room, below the tunnel level, is at present idle, as it is getting up near the bottom of the tunnel level; it has not changed to notice. The stope in the first lode, above the tunnel level, continues to turn out a little green ore; it has lengthened to the north and south since last reported on. The drive west from our prospecting cross-cut through the south slide still continues crossing the lode, but has no great change to notice. The stopes from the ends of the winze in the 42 are now worked out. The end driving north at the 54 is now idle; this end has a very decided change. The ground has now the most promising appearance for ore that I have yet seen in this level. I hope we shall quickly resume the driving of this end.

PROVIDENCIA.—I mentioned in my last report on this place that we were sinking a winze. We had better call it an underhand stope, as we now have it 27 ft. long by 4 ft. wide; it is now turning out a fair quantity of green ore.

MINA GRANDE.—In the west branch nothing is now being done, as we do not need the ore, the 12 winze giving sufficient to supply the furnace with what we have already broken. This place has no change. The lode in the winze sinking in the 12 is not so solid as it was; it has now a little more quartz in it than it had, but I think the ore is of better quality. The 24 fm. level end is now idle. Nothing to report.

Dec. 20: Tirito. The stope in the first lode above the tunnel level, south of the engine-room, continues about the same as last week. The drive west from our prospecting cross-cut through the south slide still continues crossing the lode, and has now struck some very good ore on one side of the level. We have now opened on this ore 8 ft. long. We cannot yet tell the length, width, or direction of it. We have now commenced to drive in it, so by next week we shall be able to tell more about it. At present it looks well.—Providencia: The lode in the underhand stope below the tunnel level in this place has again improved. The ore is lengthening, and appears of better quality, as it now shows some spots of good petanque mixed through the green ore.—Mina Grande: The lode in the winze in the 12 is a little more solid than it was last week, having more ore and less quartz in it.

Tirito.—Dec. 28: The stope in the first lode above the tunnel level, south of the engine-room, has no change to notice. Our prospecting cross-cut through the south slide at the tunnel level has now been resumed to drive towards the Soledad, or nearly south-east; here we have nothing yet to report. In the drive west from the above cross-cut we are still working on the ore discovered last week; we can now see it about 10 ft. long and 5 ft. wide. It appears to be a small chimney of ore dislocated or broken off from the main body by the slide; it appears to be strongest in the bottom of the level, so we are going to sink in it. The ore appears to be of very good quality, being well spotted with petanque.—Providencia: The lode in the underhand stope below the tunnel level continues the same last week.—Mina Grande, West Branch: We have again commenced to work in this place with a slight improvement; the ore is lengthening to the south. The lode in the winze sinking in the 12 fm. level has nothing new to report.

Frank W. Bresch, Dec. 13: Referring to last month's working the result is in no way attributable to any altered conditions underground, but entirely owing to starting the driving of the 54 and 24 fm. levels (to effect which the Tirito and Mina Grande pumps require to be kept working, thus throwing the whole expense for fuel and engine driving on merely two ends, all of which is charged to the mine in the working account), and also the winze from the 12 fm. level towards the 24 in Mina Grande. All three of these are expensive works, for although we hope to keep the furnace supplied with ore from the winze, instead of from the new west branch in tunnel level, it may be included as dead work, as the ore from the one can be put out of the mine for less than half the cost of the other. In consequence of the heavy bill for fuel every week through the drought rendering it absolutely necessary to take required until the end of next August—at least, before the people remove their animals, which they have already commenced doing—I am sorry to have to advise that we have been compelled to stop the ends in the 54 and 24 fm. levels. The winze in the 12 is kept going, and also the cross-cut south of the south slide, which would have been stopped in favour of driving the 54, but for the latter being more expensive to drive, and also requiring the pumps to work. Taking into account that the water is falling daily, it is not such a great disadvantage to stop the ends in the bottom of both shafts, as they can be used as reservoirs, and the water pumped as required for the lixiviation and boilers, as we have no tanks for the lixiviation works; those we have contain the salt water returned from the washing of the patio ores, to lixiviate with which would involve a loss of silver.

I am the more sorry to stop the 54 fm. level end, as the ground changed during the week, and is more favourable for us than any met with since leaving the shaft. The delay in the 24 does not so much matter, as the ground has there also changed for the better, and work can proceed more rapidly should it become necessary to force it. The cross-cut south in tunnel level shows ore still, and the ground has improved for driving. The weather, I am sorry to say, remains the same, nevertheless a few showers fell during the week, which, although not sufficient to do good, may I hope be an indication that rain is not far off. The Government have suspended the import duties on all necessary articles of food in this and the adjoining States of Chihuahua, Baja California, and Sonora; this is a step that ought to have been adopted three months since. On the subject of fuel I am extremely anxious; everyone who will bring any is employed, and we have risen the price, nevertheless I really have but small hope of being able to obtain the necessary amount, as there is scarcely any food or water for the mules.

Dec. 20: The workings below the tunnel level in the Providencia Mine continue to improve. The ore yielded is of the same high class always found in this mine, and is more solid than hitherto. During the week very good dolomite ore was cut south of the south slide in the Tirito Mine. You will note by Capt. Clemon's letter that we are opening out on it, and from its appearance I do not think it is a part of the main course of ore for which we are exploring. (Note: This may be ex-

pected more to the east.—J. A. Morgan.)—The lode at this point is over 300 ft. in width, and probably nearer 400 ft. wide, to explore which with only one end going at a time will, although the ground is easy for driving, be very tedious work.

Dec. 22: Since writing on the 20th inst. there is nothing new underground. The ore south of the slide still holds. I hear the telegraph will be continued from Mazatlan to Ures, and on to Tucson; as it will pass Alamos it will be a great advantage to this district. The work is to commence in January next.

Dec. 23:—You will note from Capt. Clemon's letter that we have the ore 10 feet long and 5 ft. in width. We have about 10 tons cleared for the stamps which appear to be of a high ley. It contains more petanque generally distributed through it than is usually found in the green ore here, although, from its general distribution, but a small proportion can be selected for exportation. I hope to forward an assay of the ore next week. Although the bunch is very solid and hard, and increases in length and width apparently as it goes down, I think it is separated from the main body or course of ore for which we are exploring, as the ground is perfectly dry, whilst we know that the lode contains water. We are sinking on the ore, and also rising in the back. The ore on which we are sinking below the tunnel level, in the Providencia Mine, continues without alteration, and I begin to hope it may go down to the north of the end in the 10 fm. level. Should this ore, and that south of the slide continue, as soon as the new furnace is completed, and the fuel delivered necessary to carry us through the next rainy season, I hope to be able to recommence work in the 24 (Mina Grande), and perhaps also in the 54 (Tirito).

The drought, I am sorry to say, still continues; the few slight showers that have fallen in other parts of the district have been too partial to do any good. I am doing everything possible to secure a supply of fire-wood; nevertheless, those who are bringing it cannot be induced to remain for any stated time, or to deliver any certain quantity, and some are leaving every week in order to go to some place where there may be pasture for their animals. I hope the importance of the discovery we have made, not so much of the ore as of the fact that the lode continues to the south of the slide in the Tirito Mine may be fully realised by the company. For my own part, although always believing in its continuance, I did not hope to make the discovery in so short a time, and at so small an expense for cross-cutting. The labour until the lode was cut only cost \$276.42, and I believe we have ore enough to pay all expenses of the explorations made. As far as we can judge the lode is not thrown by the dislocation, and I fully expect the fine course of ore found to the north will repeat itself to the south of this so-called slide, where all is virgin ground; and it may be looked upon as a new mine, with a shaft already down 54 fms. below adit, and the backs solid to surface.

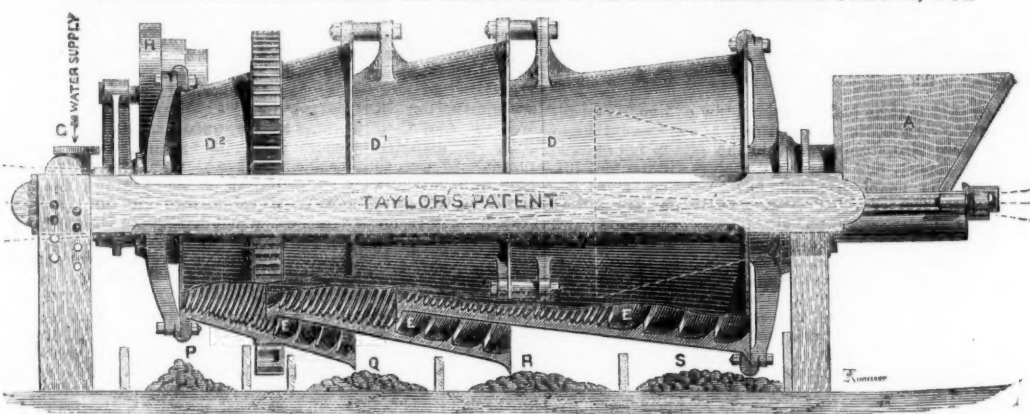
HOISTS.—The object of the invention of Mr. F. H. BOMNUTER, of Kupferdreh, is to arrest the motion of the cage of the hoist when the rope to which the cage is suspended breaks; this object is effected by means of a break connected to the cage, which break is held in action by a horse-shoe electro-magnet so long as the rope remains good. The insulated electric conducting wires are placed within the rope, and as soon as the rope breaks the break blocks are applied to the guide posts of the cage, and instantly stop it. The wires in the rope are also connected to a bell or other equivalent in

the engine-room to give notice or to communicate signals to the engine-driver. The battery for generating the electric current is attached to the drum on which the rope with the insulated wires is wound. The break consists of blocks, which are moved upwards by rods, acted upon by crank shafts and weighted levers. As soon as the circuit of the electric current is broken by the breaking of the insulated wires in the rope, the break blocks are pressed by the levers against the guide posts, thereby stopping the further descent of the cage. When signalling from the cage to the top of the shaft the electric current is brought into communication with a bell or other equivalent in the engine-room.

GAS ENGINES.—The invention of Messrs. LOUIS SIMON, and H. L. MULLER, of Birmingham, consists in applying to gas engines certain air-gas generating apparatus so as to work the engines with air-gas instead of coal-gas. The apparatus they prefer to employ in the manufacture of the hydrocarbon or air-gas is that termed the Alpha, and by connecting to this machine at the air drum a small air tube, and attaching this tube to the slide valve of the engine, the relighting of the inner light is ensured. This tube is furnished at the end next the valve with a perforated nozzle through which sufficient oxygen is supplied from the air drum, and this prevents the choking of the inner light by foul air. The ordinary connection pipes for introducing the gas are also required. Other forms of either engine and gas apparatus may be employed so long as the means for driving out the foul air generated by the explosions in the inner valve chamber be employed, the principle being that of furnishing to the inner valve chamber by any suitable means sufficient amount of oxygen to admit of the rekindling of the light after each passage of the valve, the fact being ascertained that a result different from the employment of coal-gas arises in using hydrocarbon or air-gas—namely, that unless oxygen be supplied to the inner valve chamber the light in that chamber is choked by foul air, and thus prevented from rekindling.

HOLLOWAY'S OINTMENT AND PILLS—DANGEROUS CHEST COMPLAINTS.—The enumeration of these diseases is scarcely necessary, as, unfortunately, most Englishmen know them to their cost. Coughs, common colds, influenza, bronchitis, asthma, pleurisy, inflammation of the lungs, and even consumption in its early stages, are best treated by rubbing Holloway's ointment upon the chest and upon the back between the shoulders. It penetrates internally, checks the cold shiverings, relieves the over-gorged lungs, gradually removes the oppression from the chest, and restores the obstructed respiration, hitherto so distressingly disagreeable and highly dangerous. In treating this class of diseases, Holloway's pills should always be taken while using his ointment; they purify the blood, promote perspiration, and allay dangerous irritations.

FIRST SILVER MEDAL AWARDED BY THE ROYAL CORNWALL POLYTECHNIC SOCIETY, 1876.



TAYLOR'S PATENT DRUM DRESSER,

FOR SEPARATING AND SIZING MINERAL AND OTHER SUBSTANCES.

By the aid of this invention any materials, which are of different specific gravity, can be concentrated and sorted mechanically, while in the case of ores the fine mineral is brought up with the larger particles instead of being washed into the waste—a most important feature.

This machine uses very little water in proportion to the quantity of material treated, and will be found a most useful and efficient dressing apparatus.

For further particulars, and to see machines at work, apply to the Patentee,

H. E. TAYLOR, 15, Newgate Street, Chester.

THOMAS TURTON AND SONS,

MANUFACTURERS OF

MINING STEEL of every description.

CAST STEEL FOR TOOLS. CHISEL. SHEAR, BLISTER, & SPRING STEEL.

MINING TOOLS & FILES of superior quality.

EDGE TOOLS, HAMMERS, PICKS, and all kinds of TOOLS for RAILWAYS, ENGINEERS, CONTRACTORS, and PLATELAYERS.

LOCOMOTIVE ENGINE, RAILWAY CARRIAGE and WAGON SPRINGS and BUFFERS.

SHEAF WORKS & SPRING WORKS, SHEFFIELD.

LONDON OFFICES.—35, QUEEN STREET, CITY. PARIS DEPOT.—12, RUE DES ARCHIVES.

NEW YORK STORE.—102, JOHN STREET.

MANCHESTER WIRE WORKS.

NEAR VICTORIA STATION, MANCHESTER

(ESTABLISHED 1790).

JOHN STANJAR AND CO.,

Manufacturers by STEAM POWER of all kinds of Wire Web, EXTRA TREBLE STRONG for

LEAD AND COPPER MINES.

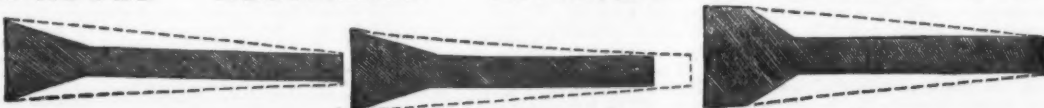
Jigger Bottoms and Cylinder Covers woven ANY WIDTH, in Iron, Steel, Brass, or Copper

EXTRA STRONG PERFORATED ZINC AND COPPER RIDDLES AND SIEVES.

Shipping Orders Executed with the Greatest Dispatch.

TO COLLIERY PROPRIETORS.

IMPROVED "REGISTERED" SECTIONS OF SCREEN STEEL.



THE DOTTED LINES SHOW THE ORDINARY SECTION, AND THE DARK GROUND THE IMPROVED SECTIONS.—A saving of at least 30 per cent. is effected by the great reduction in weight of material.—For price and particulars apply to—

JOEL EATON WALKER, STEEL MERCHANT, SHEFFIELD

NOTICE.—These Sections are Registered

ORMEROD, GRIERSON, AND CO.

ST. GEORGE'S IRONWORKS, MANCHESTER,
Engineers, Millwrights, & Boiler Makers,

MANUFACTURERS OF

Stationary Steam Engines and Boilers for all purposes, Mill Gearing, Sugar Machinery, Cranes, Turn-Tables, and Railway Fixed Plant of all descriptions; also, the Diamond Rock Boring Company's Plant—viz.: Compressed Air and Air-Compressing Engines, Prospecting Machines, Tunnelling Machines, and Shaft Sinking Machines.

HYDRAULIC PRESSES OF VARIOUS KINDS

Have the Largest Assortment in the Trade of

P A T T E R N S,

WITH MACHINE-CUT TEETH, OF

SPUR WHEELS, BEVEL WHEELS.

MITRE WHEELS,

ALSO

F L Y W H E E L S.

DRIVING PULLIES & DRUMS,

CAN BE SUPPLIED BORED AND TURNED IF REQUIRED.

CATALOGUES ON APPLICATION.

LONDON OFFICES:

No. 5, WESTMINSTER CHAMBERS,

VICTORIA STREET,

WESTMINSTER, S.W.



Porter's Governor for Stationary Engines. Also Governors on the same principle adapted for Marine Engines.

CLAYTON AND SHUTTLEWORTH'S

NEW CATALOGUE, WITH REVISED
LIST OF PRICES, OF

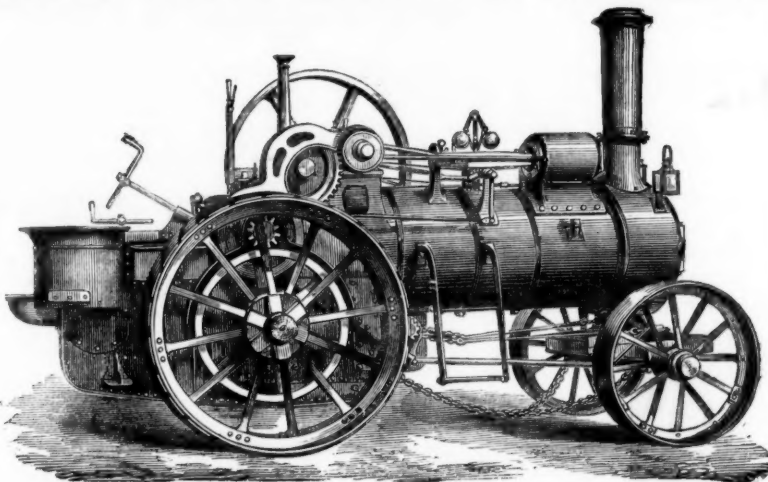
Portable and Fixed
Steam Engines.

Traction Engines and
Wagons.

Mortar Mills.

Winding Gear.

Circular Saw Benches,
&c., &c.



Can be obtained post free on application to—

CLAYTON & SHUTTLEWORTH, Lincoln,

78, LOMBARD STREET, LONDON; and 23, EXCHANGE BUILDINGS, LIVERPOOL.

STEVENS' PATENT UNDERGROUND WINDING ENGINE,

DESIGNED FOR USING COMPRESSED AIR OR STEAM,

SIMPLE, COMPACT, PORTABLE.

Silver Medal, Royal Cornwall Polytechnic Society, 1876.

No. 1 size, 7 in. single cylinder, with 2 ft. drums.
No. 2 size, 9 in. single cylinder, with 2 ft. 6 in. drums.

Larger sizes made with two cylinders.

A.— 6 in. double cylinder, with 2 ft. 3 in. drums.
B.— 8 in. " " 3 ft. 0 in. drums.
C.— 10 in. " " 3 ft. 6 in. drums.
D.— 12 in. " " 4 ft. 6 in. drums.

MANUFACTURED BY

THE USKSID CO.,

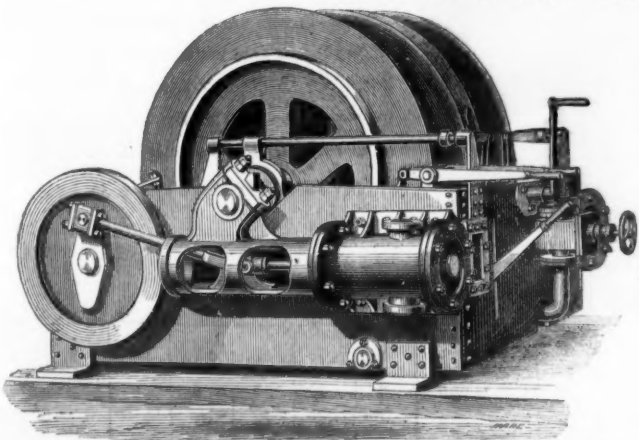
ENGINEERS, MAKERS OF PUMPING AND WINDING
MACHINERY, AND FORGINGS OF EVERY
DESCRIPTION,

NEWPORT, MON

Agents for the six Northern Counties—

TANGYE BROTHERS, ST. NICHOLAS BUILDING
NEWCASTLE-ON-TYNE.

[This Advertisement appears fortnightly.]



YEADON AND CO, COLLIERY & MINING ENGINEERS

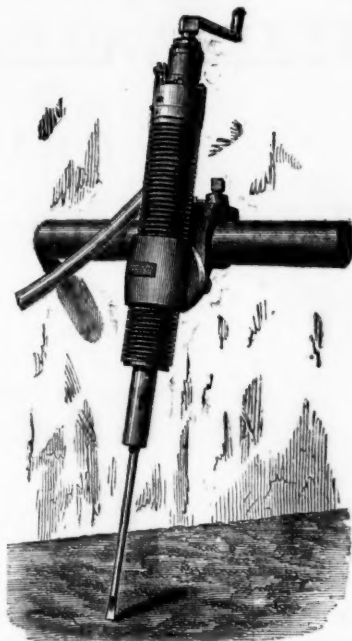
Manufacturers of WINDING, HAULING, and PUMPING ENGINES, EMMET'S PATENT BRICK MACHINE, Boilers and Fittings, Steam Piping, Donkey Pumps, Lift Pumps, Perforated Clay and Mortar Mills, Round and Flat Rope Pit-head Pulleys, Wrought-iron Head Gear, ROOFS and GIRDERS, KIBBLES, ONE, TWO, and THREE-DECK CAGES, COAL TIPPING and SCREENING APPARATUS, VENTILATING FANS, TUBBING, GIRDERS, PILLARS, POINT PLATES, and every description of Colliery and Mining Plant.

CROWN POINT FOUNDRY, LEEDS.

LONDON AGENTS, — HAUGHTON AND CO., No. 122, CANNON STREET E.C.

"DARLINGTON" ROCK BORER.

NO VALVE.



SCREW, OR CRADLE MOUNTED, BORING MACHINES.

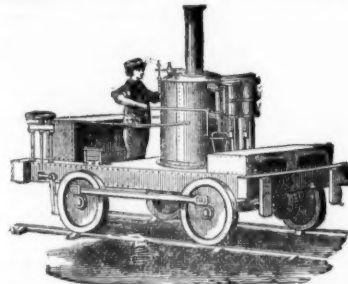
AIR COMPRESSORS, DRIVING AND SINKING APPARATUS.

JOHN DARLINGTON, 2, COLEMAN-STREET-BUILDINGS,
MOORGATE STREET, LONDON, E.C.

LAMBERT BROTHERS,
Alpha Tube and Fitting Works,
WALSALL.

Boiler Tubes, Hydraulic Tubes,
Sluice Valves, Hydrants,
Stop and Draw-off Cocks,
Boiler Mountings,
Safety Valves, Pumps, &c.

CHAPLINS' PATENT



CONTRACTORS' LOCOMOTIVES,

9 TO 27-HORSE POWER,

CAN BE MADE TO SUIT ANY GAUGE,
FROM 2½ FEET UPWARDS.

SPECIALLY ADAPTED FOR

STEEP INCLINES & QUICK CURVES

PATENTEES AND SOLE MANUFACTURERS:

ALEXANDER CHAPLIN AND CO.,
CRANSTONHILL ENGINE WORKS.

GLASGOW.

LONDON HOUSE:

M'KENDRICK, BALL, AND CO.,
63, QUEEN VICTORIA STREET, LONDON, E.C.

WIRE ROPES.

JOHN AND EDWIN WRIGHT,

PATENTEES,



ESTABLISHED 1770.

**MANUFACTURERS OF EVERY DESCRIPTION OF
IMPROVED**

Patent Round and Flat Wire Ropes,

From the very best quality of Charcoal and Patent Steel Wire. Galvanised Wire, Ropes for Ships' Rigging, Galvanised Signal and Fencing Strand, Copper Rope Lightning Conductors, Colliery Ropes and Steam Plough Ropes made from the best Patent Improved Steel Wire.

PATENT ROUND AND FLAT HEMP ROPES,

Hemp, Flax, Engine Yarn, Cotton Waste, Tarpauling, Oil Sheets, Brattice Cloth, Wagon Covers, &c., &c.

UNIVERSE WORKS, MILLWALL, POPLAR, LONDON.
UNIVERSE WORKS, GARRISON STREET, BIRMINGHAM.
CITY OFFICE, No. 5, LEADENHALL STREET, E.C.

All communications to be forwarded to the BIRMINGHAM ADDRESS.

THE NEWCASTLE DAILY CHRONICLE
(ESTABLISHED 1764.)
THE DAILY CHRONICLE AND NORTHERN COUNTIES ADVERTISER
Offices, Westgate-road, Newcastle-upon-Tyne; 50, Howard street, North Shields; 195 High-street, Sunderland.

Just Published, Free Edition.

GUIDE TO HEALTH; OR, ADVICE AND INSTRUCTIONS FOR THE CURE OF NERVOUS DEBILITY.—A New Medical Work on the Treatment of Local Debility, Consumption, Loss of Memory, Physical Depression, Indigestion, and all diseases resulting from loss of nerve power. Illustrated with cases and testimonials. Sent free for two stamps.—Dr. SMITH will, for the benefit of country patients, on receiving a description of their case, send a confidential letter of advice.
Address, Dr. H. SMITH 8, Barton-avenue, London, W. C.

JOSEPH FENTON & SONS,

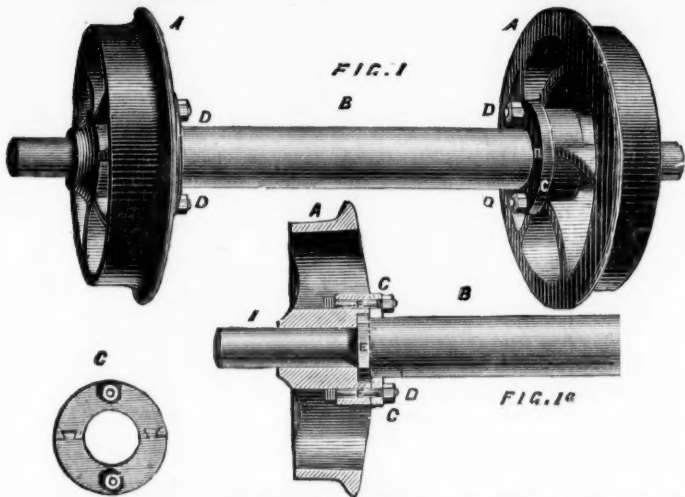
SYKES WORKS, SHEFFIELD, and 118, Cannon-street, LONDON, E.C.,

MANUFACTURERS OF

CRUCIBLE CAST STEEL CASTINGS,

HAVE PLEASURE IN CALLING THE ATTENTION OF THE MINING WORLD TO THEIR

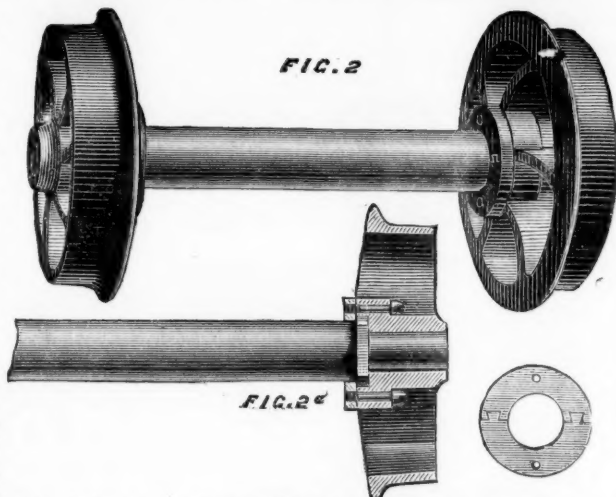
Patent Method of Fitting up Cast Steel Wheels and Axles.



Figs. 1 and 1a show a longitudinal view and plan of a pair of corf wheels and axles fitted up for outside bearings. A A, are the wheels; B, is the axle; C C, the washers; D D, the bolts; E, the collar on axle B; and F, the recessed boss in the wheel.

The wheel is cast with a recessed boss in the inside, made to any shape, corresponding in shape and depth with a collar formed on the axle. Figs. 2 and 2a show a longitudinal view and plan of a pair of corf wheels fitted up for inside bearings. The washers are secured to the boss of the wheel in outside bearings by bolts and nuts, and in inside bearings by set screws.

The advantages of the above system are:—A, the singular simplicity of fitting—enabling any inexperienced person, with the aid of a spanner or screw-driver, to detach the wheels from the axle or fit them together in a very short time. B, perfect solidity, the wheels and axles becoming as one piece. C, durability, no need of putting the wheels or axles into the fire, under any circumstances, which is so detrimental to wheels, rendering them remarkably brittle, and which under other systems are detached from the axle by the aid of fire. D, economy in fuel and wages, saving hundreds of pounds yearly to large coal owners. The



important desiderata secured by this invention of simplicity (so often wanted in the progress of mining operations in this country, but have at once been fully recognised by leading authorities in the mining world.



BOLTS, NUTS, AND COACH SCREWS.

ARCHER AND HARPER,

PROVIDENCE BOLT AND NUT WORKS, THE GREEN, DARLASTON,

Manufacturers of all kinds of Shipbuilders', Engineers', Coach, Wagon, and Fish Bolts: Coach Screws; Railway Spikes and Brobs; Hot-pressed and Forged Nuts, Rivets, Washers, &c., &c.

SHIPBUILDERS' AND RAILWAY STORES' CONTRACTORS.



COLEBROOK'S PATENT STEAM PUMPS,

FOR HIGH OR LOW LIFTS AND GENERAL PURPOSES.

SOLE MAKERS,—

MAY AND MOUNTAIN,

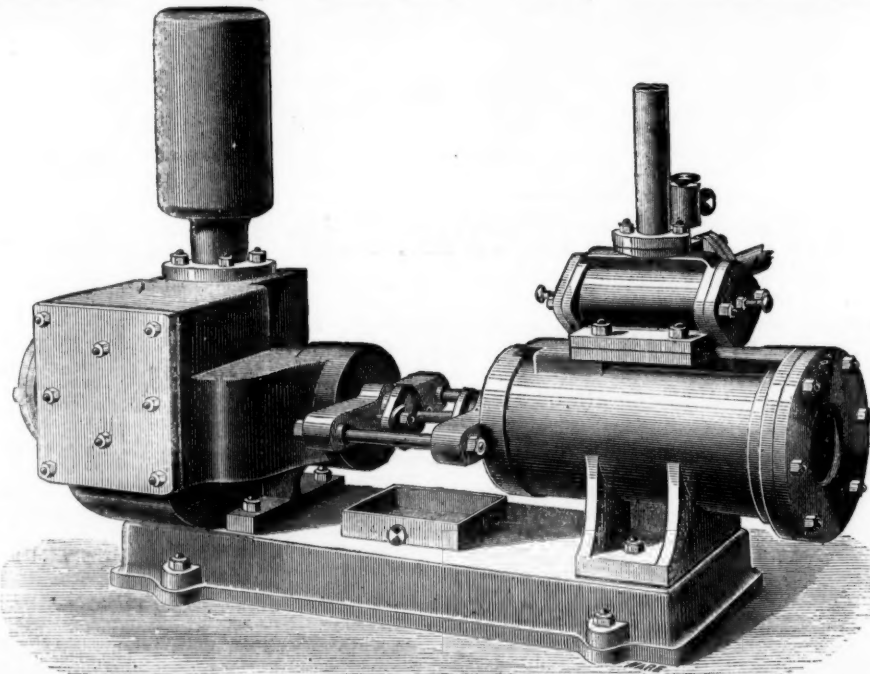
BERKLEY ST., BROAD ST., BIRMINGHAM.

The accompanying Engraving represents a Steam Pump, suitable for general purposes; it possesses the following advantages over any other Steam Pump yet before the public:—

1st.—No tappets, eccentrics, levers, or other mechanical appliances are used to actuate the steam slide valve, but this office is performed by the exhaust steam.

2nd.—The only working parts in the steam cylinder are the piston and slide valve, and as there are no working parts in either the piston or cylinder covers, the full length of stroke is obtained.

3rd.—The slide valve is so easy of access that it can be examined, cleaned, and replaced in a few minutes, and it is impossible to make any error in replacing it



after examination, because it is immaterial which way it is inserted in the valve-box, whether one way or the other upwards, or whether end for end.

The Pump Valves are Colebrook's Patent, and are made in one piece. They are either of canvas, leather, india-rubber, or other material, to suit the nature of the liquid to be pumped, and can be replaced in a very short time by any ordinary workman.

These Pumps are suitable for hot or cold water, hot or cold wort, sewage, ammoniacal liquor, tar, &c., and are adapted for use in breweries, chemical works, collieries, paper mills, dye-works, brick-yards, and for almost any other purpose.

SIZES AND PRICES OF COLEBROOK'S PATENT STEAM PUMPS.

Diameter of Steam Cylinder.....Inches	1½	3	3	3	3	4	4	4	4	5	5	5	6	6	6	7	7	7	7	8
Diameter of Pump Cylinder.....Inches	1	1½	2	2½	3	2	2½	3	4	3	4	5	3	4	5	6	4	5	6	4
Length of Stroke.....Inches	6	12	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Price	£12	£16	£17	£18	£19	£19	£20	£22	£25	£23	£28	£32	£36	£33	£36	£41	£30	£38	£41	£40
Diameter of Steam Cylinder.....Inches	8	8	8	8	9	9	9	9	9	10	10	10	10	10	10	12	12	12	12	...
Diameter of Pump Cylinder.....Inches	5	6	7	8	5	6	7	8	9	5	6	7	8	9	10	6	7	8	9	...
Length of Stroke.....Inches	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	...
Price	£45	£50	£56	£65	£50	£55	£60	£70	£81	£62	£68	£70	£80	£95	£100	£80	£85	£90	£100	...

AWARDED THE PRIZE MEDALS AT LEEDS, MANCHESTER, AND WREXHAM EXHIBITIONS, 1875 AND 1876.

HADFIELD'S STEEL FOUNDRY COMPANY,

ATTERCLIFFE, SHEFFIELD,

DEVOTE THEIR EXCLUSIVE ATTENTION TO THE MANUFACTURE OF

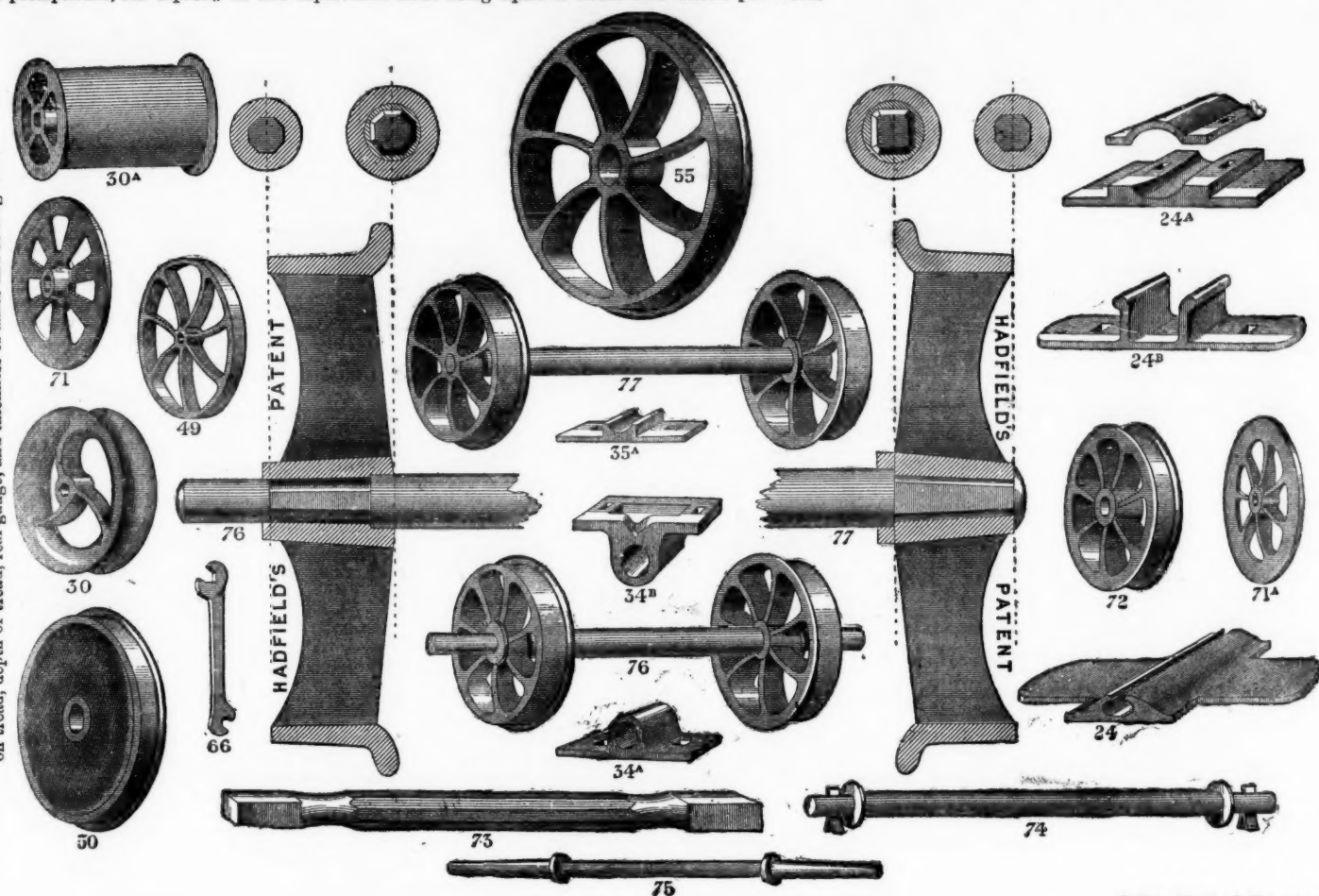
CRUCIBLE STEEL CASTINGS, for Engineering and Mining Purposes,

AND ARE THE SOLE MAKERS OF

HADFIELD'S CRUCIBLE STEEL WHEELS.

One of our departments is specially adapted for the manufacture of these Wheels (as shown below), for Collieries, Ironstone Mines, Slate Quarries, Ironworks, Lead Mines, &c. &c. We have made, and are now making, many HUNDRED THOUSANDS; and having Patented a New Method of Fitting Wheels upon axles, being cheap, effective, and expeditious, we can execute orders entrusted to us with promptitude, our capacity in this department alone being equal to about 2000 wheels per week.

N.B.—Prices per Set of Wheels and Axles, fitted complete, forwarded on receipt of diameter of wheel on tread, depth of tread, real gauge, and thickness of axles and rolling load.



[This Sheet of Drawings is Copyright.]

HADFIELD'S PATENT METHOD OF FITTING WHEELS UPON AXLES.

The advantages of the above system are that the Wheels being forced upon a Taper Square-ended Axle, by Machinery, and then riveted (the machine securing truth), it is impossible that they can come loose or get within gauge. They are very heavily fitted on, and run exceedingly true.

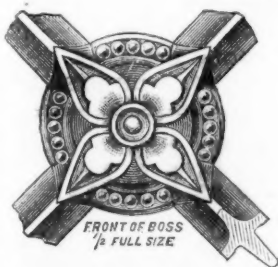
We construct the Arms of wheels upon the curved principle (as shown in the drawings above), consequently the shrinkage or cooling of the Castings is not interfered with, thus securing the greatest advantages of our very strong material.

CRUCIBLE CAST-STEEL WHEELS, when cast by us, are made from one-third to one-half lighter than Cast-Iron. They cannot be broken while working, even with rough usage, and will wear at least twelve times as long as Cast-Iron, thus saving animal and steam power, and reducing wear and tear immensely.

We would also draw special attention to our INCLINE PULLEYS and CAGE GUIDES, the adoption of which will prove highly advantageous.

HARRIS'S PATENT WROUGHT-IRON WINDOWS.

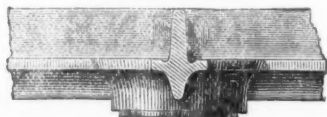
DOME AND OTHER ROOF LIGHTS, FLOOR AND PAVEMENT LIGHTS, ETC.



GREAT BRITAIN,
UNITED STATES OF AMERICA,

ARE STRONGER, SUPERIOR, AND CHEAPER
THAN ANY OTHER METAL SASHES YET
PRODUCED—COST LESS FOR GLAZING—
ARE AS CHEAP IN MANY CASES AS WOOD

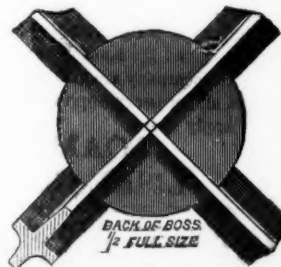
PATENTED IN



FRANCE,
GERMANY, AND BELGIUM.

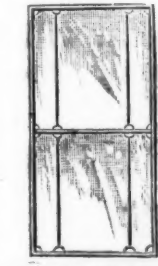
—CAN BE DESIGNED AND MANUFACTURED
TO SUIT ANY STYLE OF ARCHITECTURE
OR POSITION WHERE A WINDOW MAY BE
REQUIRED.

ARE BEING EXTENSIVELY USED IN—



Private Houses,
Parsonage Houses,
Farm Houses,
Churches,
Chapels,
Schools,

Lunatic Asylums, &c.,
Public Buildings, Banks,
Wharves, Warehouses,
Factories, Mills,
Breweries, &c.,
Engine Houses.



WATER-TIGHT WINDOWS



OUTER BAR PLAIN



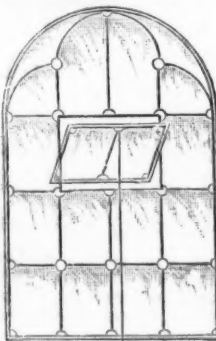
REGATED BAR FOR CASEMENTS



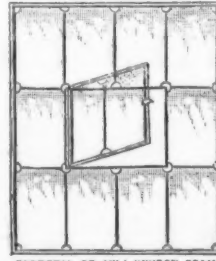
REGATED BAR FOR CASEMENTS



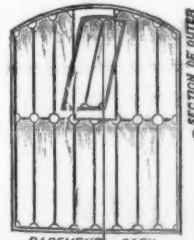
SECTION OF OUTER FRAME OF SASHES TO RUN



WAREHOUSE WINDOW FRAME



FACTORY OR MILL WINDOW FRAME



PAIR OF SASHES TO RUN WITH WEIGHTS

BASEMENT SASH NO GUARD BARS OR SHUTTER REQUIRED

ILLUSTRATED CATALOGUES
ON APPLICATION.

ILLUSTRATED CATALOGUES
ON APPLICATION.

In Basement Storeys and Exposed Positions Shutters
and Guard Bars are dispensed with.

HOME AND

EXPORT.

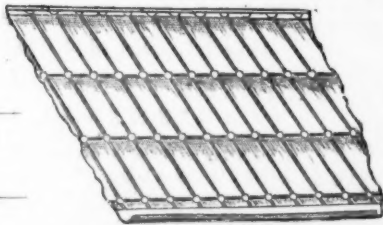
SOLE MAKER—J. T. HARRIS, Engineer, Ironfounder, and Manufacturer,

SAFE, STRONG ROOM, AND PARTY WALL DOORS, AND EVERY KIND OF CONSTRUCTIONAL AND BUILDERS' IRONWORK, LIFTS, HOISTS, ELECTRIC BELLS AND TELEGRAPHS, &c.

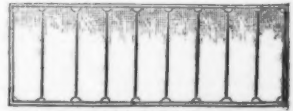
90, CANNON STREET, LONDON, E.C.; AND BEAUFORT IRONWORKS, BRISTOL.



RAISED ROOF LIGHT WITH OR WITHOUT VENTILATOR



SKYLIGHT



FLOOR OR PAVEMENT GRATING FOR GLAZING

H. R. MARSDEN, PATENTEE AND ONLY MAKER BLAKE MACHINES, OF THE WELL-KNOWN ORE GRUSHERS AND STONE BREAKERS,

WITH THE

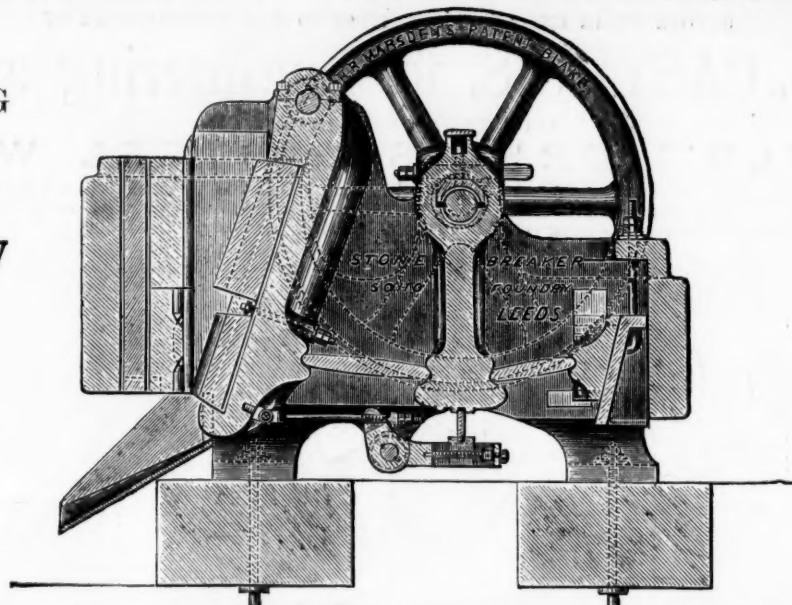
New Patent Reversible
CRUSHING OR CUBING
JAWS,

WHICH ARE CONSTRUCTED OF A PECULIAR
MIXTURE OF METAL, WEARING

Four times longer than any
other.

60 GOLD AND
SILVER MEDALS.

OVER 2000 NOW IN
USE.



For Crushing to any degree
of Fineness, or Breaking
to a required size.

Her Majesty's Government
USE THESE MACHINES
EXCLUSIVELY,
ALSO ALL THE GREAT
Mining Companies of the
World.

H. R. M. has long observed the want of cheaper
machines,
STONE AND ORE CRUSHERS,
And has at length, by means of improved appliances
for the production thereof, been enabled to reduce
the prices, yet keep up at the same time the well-
known strength of construction. Reduced prices
on application.

FIFTY per Cent., and upwards, saved by using these Machines.

TESTIMONIAL FROM MESSRS. JOHN TAYLOR AND SONS.

DEAR SIR,—We have adopted your Stone Breakers at many of the mines under our manage-
ment, and are pleased to be able to state that they have in all cases given the greatest satisfac-
tion. We are, yours faithfully,
H. R. Marsden, Esq.

6, Queen-street-place, May 10, 1877.

JOHN TAYLOR AND SONS.

DEAR SIR,—I have broken over 40,000 tons of very hard LIMESTONE into ROAD METAL, for
the Newport and other Road Trusts, in your PATENT STONE BREAKER, AND ALL WITH
ONE PAIR OF JAWS, which are STILL IN USE. I do not think at all, but am quite sure yours
are the only Machines which fully perform the work you set them out to do, and there are none
in the Show can at all compare with them. Yours, truly,
H. R. Marsden, Esq.

WILLIAM PRICE, Contractor, Gold Cliff, Monmouth.

INTENDING BUYERS ARE CAUTIONED AGAINST PURCHASING OR USING ANY INFRINGEMENT OF THE NUMEROUS PATENTS OF H. R. MARSDEN.
ILLUSTRATED CATALOGUES, TESTIMONIALS, and every information, on application to:—

H. R. MARSDEN, SOHO FOUNDRY, LEEDS, ENGLAND.
ONLY MAKER OF SAULT'S PATENT SYPHON CONDENSER.

TO COLLIERY AND MINE OWNERS.

R. HUDSON'S PATENT STEEL CORVES OR "TRAMS."

Patented July, 1875, and January, 1877.

Entire new principle, saving three-quarters to 2 cwt. "dead" weight per corve. Will hold 2 to 3 cwt. more coal than the ordinary kind, without increasing the outside dimensions. Adopted by—
Messrs. THOMPSON, WISE, & CO., Barry Port, South Wales.
Messrs. DYMOND'S Liversedge Coal Company, near Leeds.
Messrs. W. ACKROYD and BROS., Morley, near Leeds.
Messrs. CLAYTON and SPEIGHT, Farnley, near Leeds.
Messrs. JAS. WORMALD and SONS, Rawdon, near Leeds.
KINGSWOOD COAL and IRON CO., near Bristol.
MIDDLETON COLLIERY CO., near Leeds. | NEWTON COLLIERY, near Castleford. | Messrs. RUSHFORTH and Co., Adwalton, near Leeds. | Messrs. JAS. FUSSELL, SONS, and Co., Frome, Somersetshire.
T. VAUGHAN and Co.'s TRUSTEES, South Medomsley Colliery; and others.
R. HUDSON, Engineer and Ironfounder, Gildersome Street Foundry, near Leeds (Five minutes walk from Gildersome Station, G.N.R.)

The Barrow Rock Drill COMPANY

Are NOW PREPARED to SUPPLY their DRILLS, the ONLY
ONES that have been SUCCESSFULLY WORKED in the
MINES of CORNWALL. At DOLCOATH MINE, in the
HARDEST known ROCK, a SINGLE MACHINE has, since
its introduction in July, 1876, driven MORE THAN THREE
TIMES the SPEED of HAND LABOUR, and at TWENTY PER
CENT. LESS COST PER FATHOM.

In ordinary ends two machines may be worked together,
and at a proportionately increased speed. They are strong,
light, and simple, easily worked, and adapted for ends and
stopes, and the sinking of winzes and shafts.

The company are also prepared to SUPPLY COMPRESSORS,
and all necessary appliances for working the said Drills.

Apply to—

LOAM AND SON,
LISKEARD, CORNWALL.

IMPROVED STEEL WIRE FOR ROPES.

WEBSTER & HORSFALL,
(ORIGINAL PATENTEES),

MANUFACTURERS OF IMPROVED STEEL WIRE FOR ROPES
FOR COLLIERIES,

RAILWAY INCLINES, PLOUGHS, HAWSERS, &c.
SOLE MANUFACTURERS OF the HOMOGENEOUS WIRE for the
ATLANTIC CABLES of 1865 and 1866.

WEBSTER AND HORSFALL,
BIRMINGHAM.

THE GREAT ADVERTISING MEDIUM FOR WALES.

THE SOUTH WALES EVENING TELEGRAM
(DAILY), and
SOUTH WALES GAZETTE
(WEEKLY), established 1857,
the largest and most widely circulated papers in Monmouthshire and South Wales
CHIEF OFFICES—NEWPORT, MON.; and at CARDIFF.

The "Evening Telegram" is published daily, the first edition at Three P.M., the
second edition at Five P.M. On Friday, the "Telegram" is combined with the
South Wales Weekly Gazette, and advertisements ordered for not less than six
consecutive insertions will be inserted at a uniform charge in both papers.
P. O. O. and cheques payable to Henry Russell Evans, 14, Commercial-street
Newport, Monmouthshire.

THE IRON AND COAL TRADES' REVIEW.
The IRON and COAL TRADES' REVIEW is extensively circulated amongst the
Iron Producers, Manufacturers, and Consumers, Coalowners, &c., in all the iron
and coal districts. It is, therefore, one of the leading organs for advertising every
description of Iron Manufactures, Machinery, New Inventions, and all matters
relating to the Iron, Coal, Hardware, Engineering, and Metal Trades in general.
Offices of the Review: 7, Westminster Chambers, S.W.
Remittances payable to W. T. Pringle.

THE "CHAMPION" ROCK BORER

STANDS UNRIVALLED

For Tunnels, Mines, Quarries, Harbour Works, Cutting
Blocks of Granite, &c.

The working parts are made of the toughest steel and phosphor-bronze—steel castings are also used—so
as to combine strength with light weight.



AIR-COMPRESSING MACHINERY

Of the simplest and best construction.

Combined Water-pressure Engines and Air-compressors,
Giving most excellent results.

ULLATHORNE AND CO., Mechanical and Consulting Engineers,
63, QUEEN VICTORIA STREET, LONDON, E.C.

THE ROANHEAD ROCK DRILL.

BY ROYAL LETTERS PATENT.

This justly-celebrated Rock Drill, the only one invented that will
work in the hardest rock without more than the usual repairs re-
quired by any ordinary machinery, is now offered to the public.

It has been most successfully worked in the well-known Hematite Mines of Lancashire and Cumberland. Will drive 50 to 60 ft.
in hard rock without change of drill, and can be worked by any miner, and kept in repair by any blacksmith. It is the most
simple rock drill ever invented, and cannot with fair usage get out of order.

Plans, Estimates, including Compressors, and all other Mining Machinery, supplied on application to the sole makers,—

SALMON BARNES AND CO.,

MINING ENGINEERS.

Canal Head Foundry and Engineering Works, Ulverston.

J. WOOD ASTON AND CO., STOURBRIDGE

(WORKS AND OFFICES ADJOINING CRADLEY STATION),

Manufacturers of

CRANE, INCLINE, AND PIT CHAINS,

Also CHAIN CABLES, ANCHORS, and RIGGING CHAINS, IRON and STEEL SHOVELS, SPADES
FORKS, ANVILS, VICES, SCYTHES, HAY and CHAFF KNIVES, PICKS, HAMMERS, NAILS,
RAILWAY and MINING TOOLS, FRYING PANS, BOWLS, LADLES, &c., &c.

Crab Winches, Pulley and Snatch Blocks, Screw and Lifting Jacks, Ship Knees, Forgings, and Use Iron of all descriptions,
STOURBRIDGE FIRE BRICKS AND CLAY.